TRAFFIC MOVED FASTER with less strain on drivers and pedestrians when downtown light levels were increased more than 300 per cent. New lights were installed on primary and secondary thoroughfares and residential streets in order of need for lighting protection.

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The plan gives top priority to streets where pedestrian and automobile traffic is heaviest. It utilizes filament, sodium, and mercury-vapor luminaires, each applied where its advantages can best be used.

The first relighting doubled illumination in the downtown business district, an area of over five square miles. Other streets followed, on a priority basis, and the relighting program is continuing.

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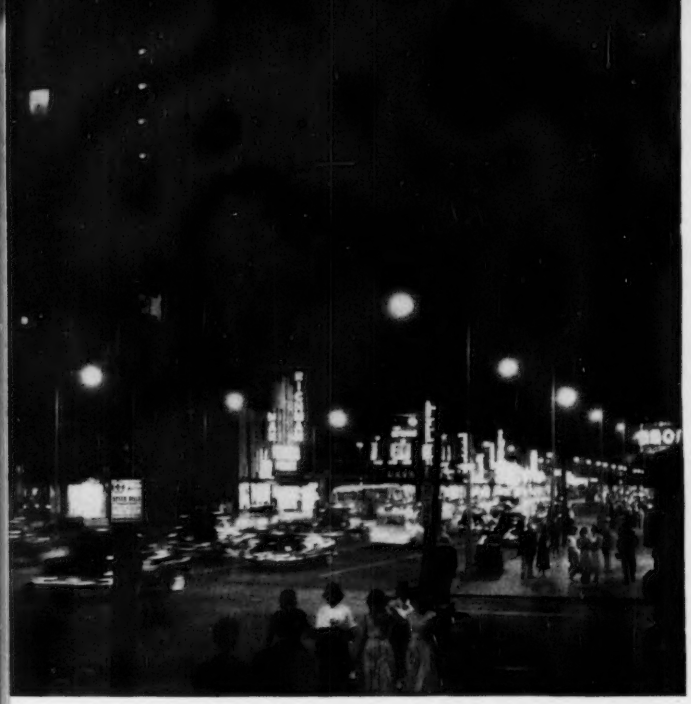
LIGHT LEVELS were recorded and used in assigning relighting priorities to city's business and residential streets.

DARK STREETS caused accidents which spurred drive for better lighting to eliminate this major cause of traffic toll. Surveys have shown that each night traffic fatality costs a community $65,000.

RELIGHTING PLAN is studied by J. E. Hess, G.E. Co., H. S. Nonneman, Dayton Power & Light Co., plan's originator, Mayor Lohrey, former City Manager McClure. Relighting cut night accidents 40%.



MORE BUSINESS came as crowds of evening shoppers were drawn by bright, safe streets. Stores started profitable evening store hours. New ventures were encouraged. Daytonians enjoyed more shopping time.

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helps business, cuts accidents

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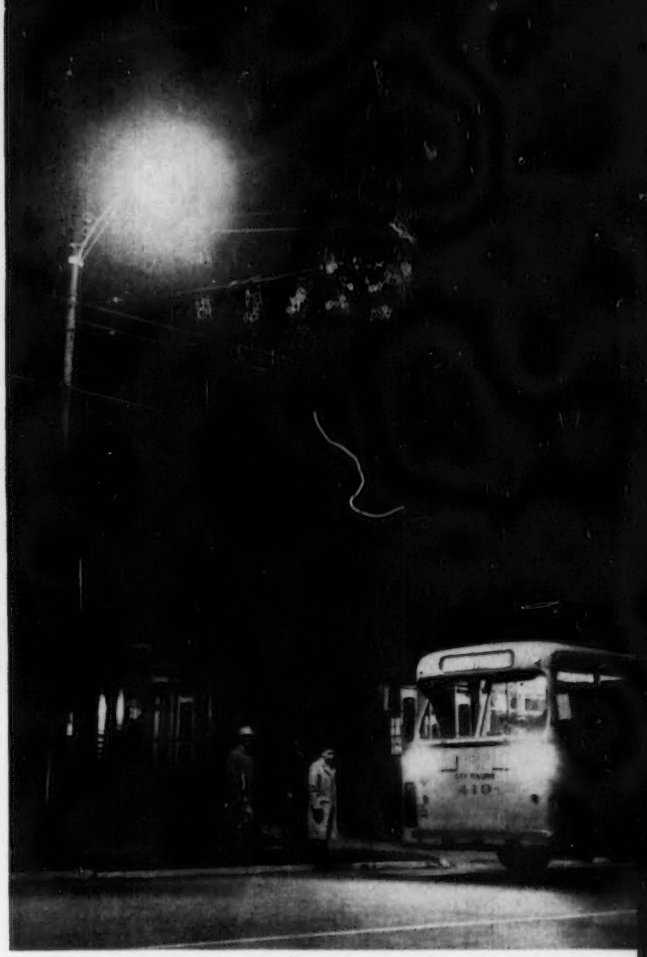

NO MORE FEAR for pedestrians at night, after relighting. Proud of bright, cheery streets, they welcome the end of robberies and molestations, feel safer in residential sections after dark.

PROPERTY IS SAFER. Dayton police and fire departments report that the new street lighting enables them to move faster and more efficiently to prevent property losses by fire and theft.

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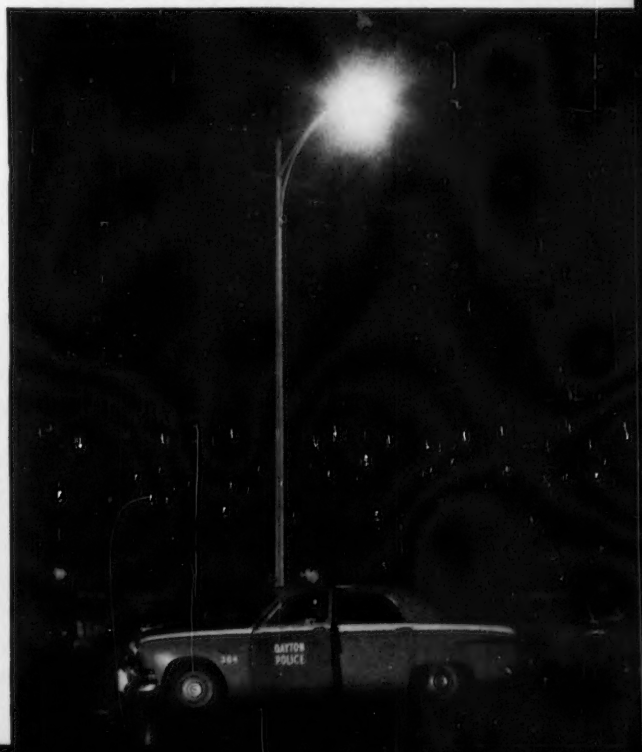

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Traffic Engineering

OFFICIAL PUBLICATION OF THE INSTITUTE OF TRAFFIC ENGINEERS

VOLUME XXIII | JULY, 1953 | NUMBER 10

COVER: The famous Peace Bridge across the Niagara River between Canada (upper left) and Buffalo, New York, in the foreground. The canopies in the right foreground are for both the collection of toll (outbound) and U. S. Customs inspection (inbound). Canada's toll and Customs house appears at the far end of the bridge. The Niagara leg of Buffalo's section of New York Thruway will connect through the park (left front) to the Peace Bridge. Those attending the 24th Annual Meeting of the Institute at the Buffalo Statler, September 28-October 1, this year, will have an opportunity to see first hand, all this, plus many other fine traffic facilities.

Traffic Engineering is that phase of engineering which deals with the planning and geometric design of streets, highways, and abutting lands, and with traffic operation thereon, as their use is related to the safe, convenient, and economic transportation of persons and goods.

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Frankly Speaking

STOP HIDING YOUR LIGHT UNDER A BUSHEL

THE RELATIONSHIPS of a man to his profession are very real and are matters of individual as well as group concern. The professional group usually develops through association a set of cognate purposes and objects, policies and procedures, to which the individual subscribes when he joins the profession. The association thus established is largely dependent on a spirit of mutual aid and assistance.

When we joined the Institute of Traffic Engineers, we, individually, subscribed to its objectives and personally pledged ourselves to its purposes. We all promised to strive for the advancement of traffic engineering, the fostering of traffic engineering education, and the stimulation of research and professional development.

One of the principal means of accomplishing our purposes is the exchange of information and knowledge among ourselves. It is for this purpose primarily that TRAFFIC ENGINEERING is published. An original requirement in the early charter of the Institute of Traffic Engineers demanded the preparation and submittal of a technical paper by anyone who desired to affiliate himself with the Institute. More recently, the individual members, especially those of Junior and Associate grade, are encouraged to compete for the Past Presidents' Award for merit in traffic engineering. Thus, another opportunity is provided for the individual to gain recognition from his profession.

It is recognized that modesty is a virtue and generally speaking engineers are not glib. It is also recognized that the individual's advancement is dependent upon his contributions and achievements. All too often it is felt the individual either through modesty or perhaps "sheer laziness" fails to gain full advantage from his individual contributions by his neglect to "write up" for his professional brethren some of the lessons he has learned in his individual areas of achievement.

The development of the profession nonetheless is contingent upon the little grains of knowledge picked up here and there by the individual in his daily work to reduce accidents or congestion. Sometimes the most profound truths grow out of simple experiment, and there is no need to feel a sense of immodesty by setting down in writing, observations which were new or enlightening to you as an individual. Frequently, it is felt that there is a false notion that unless the individual has spent large sums of money or achieved a place of distinction that he is not in a position to report on his individual findings and accomplishments. Nothing could be further from the truth; rather it is the findings of one man that provokes another to comment, check and verify.

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Theodore M. Matson

Director

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Operation of The "Volume-Density" Vehicle-Actuated Traffic Signal Controller*

By D. L. Gerlough (Assoc. Mem., ITE)

Institute of Transportation and Traffic Engineering, University of California

Part I — General Operation

THE "VOLUME-DENSITY" vehicle-actuated controller is a form of analog computer which establishes the signal cycle on the basis of the traffic demands of the intersection at the time. It differs from other vehicle-actuated controllers in that it takes account of the following variables:

Number of cars waiting against the red signal

Length of time waited by first vehicle arriving against the red signal

Instantaneous volume of traffic on the phase having the green signal (called density by the manufacturer)

Certain functions of these variables are built into the controller, but the traffic engineer can change the parameters of these functions by means of 28 adjustment dials which appear on the panel of the instrument. Figure 1 shows the panel layout of the controller.

For convenience in this discussion numbers have been assigned to the various dials, as shown in Figure 1.

In the descriptions of the various functions, unless specifically stated otherwise, phase A is used for purposes of illustration, and a two-phase controller is assumed. Insofar as practicable, the nomenclature used herein is in accord with ITE Technical Bulletin No. 3.**

Initial Portion

In all actuated controllers the green interval is divided into an initial portion and an extendible portion. The initial portion is for the purpose of clearing out all vehicles which have been waiting during the red period between the detector and the stop line. Efficient operation of some of the features of the "volume-density" controller requires that the detectors be placed several hundred feet from the stop line. This necessitates a long initial portion during hours of heavy traffic when many cars may be waiting between the detector and the stop line. In hours of light traffic when only a few cars may be waiting, only a short initial portion is required. This is accomplished by dividing the initial portion into two parts—a minimum initial and an added initial which is inserted when the number of vehicles waiting requires more clearance time.*** There are three controls for the initial portion as follows:

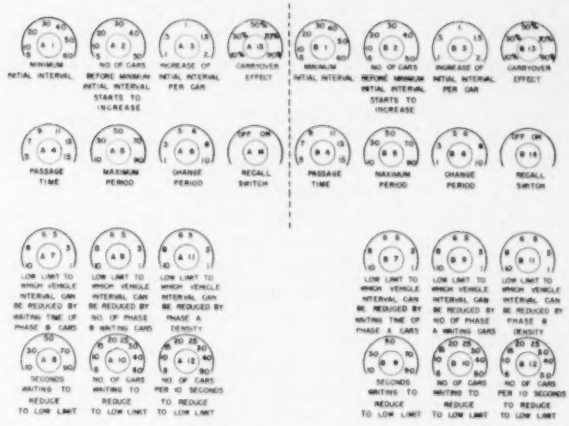


Fig. 1

Dial No. in Fig. 1	Designation by Manufacturer
A1	Minimum initial interval
A2	Number of cars before minimum interval starts to increase
A3	Increase of initial interval per car

The inter-relationship between these controls is indicated graphically by Figure 2. For practical purposes the minimum initial setting should not be less than 10 seconds. Below this value certain characteristics of the circuitry cause a spurious added initial.

When there is traffic waiting on the opposite phase (against the red light) the controller advances to the extendible portion as soon as the minimum initial has been timed out. When there is no traffic waiting on the red phase, the controller will remain in the minimum initial position even though the minimum part of the initial portion has been timed out. Then, on actuation of the detector on the opposite phase, the controller advances to the extendible portion.

Extendible Portion

The extendible portion permits the relative demands of traffic on the phase having the green to be compared with the demands of the phase having the red. During the extendible portion each vehicle actuating the detector on the green phase permits the green time to be tentatively lengthened by a preset increment. Simultaneously, the time gaps between vehicles on the green phase are compared with a continuously-computed allowable gap. There are five circuits provided for controlling the extendible portion. The names of the various circuits and their respective adjustment dials are indicated in Table 1.

---

*This report, originally prepared for the instruction of students, is presented here in the belief that it may be of interest to traffic engineers.

***Traffic-Actuated Traffic Signal Controllers*, Institute of Traffic Engineers, Technical Bulletin No. 3, 1950. (Also adopted by American Standards Association as American Standard D-13.1-1950).

***The added initial is inserted before the minimum initial.

The *passage time* dial (A4 in Figure 1) adjusts the length of the increment of green time tentatively added by actuation of the detector on the phase having the green. Adjustment is normally made so as to allow time for a slow-moving vehicle to travel from the detector to the stop line. The purpose of this adjustment is to allow a vehicle moving with the green to enter the intersection once it has crossed the detector, but to terminate the green thereafter

TABLE I

Controls for Extendible Portion

Name of Circuit	(Phase A) Controls	
	Label on controller panel	Dial No. in Fig. 1
Passage Time	Passage Time	A 4
Time Waiting	Low Limit to which vehicle interval can be reduced by waiting time of Phase B cars	A 7
	Seconds waiting to reduce to low limit	A 8
Cars Waiting	Low limit to which vehicle interval can be reduced by No. of phase B Waiting Cars	A 9
	No. of cars waiting to reduce to low limit	A 10
	Carry over (Phase B)	B 13
Instantaneous Volume (called density by the manufacturer)	Low limit to which vehicle interval can be reduced by Phase A density	A 11
	No. of cars per 10 seconds to reduce to low limit	A 12
Maximum	Maximum period	A 5

if there is waiting traffic. If another vehicle actuates the detector before expiration of the passage time, the unused time is cancelled and another increment is added. This cancellation and addition of increments may continue until the maximum is reached. If, however, the allowable gap, as established by one of the circuits described below, becomes shorter than the passage time, the factor associated with the shortest allowable gap preempts control. Whenever the incremental green time expires without being renewed or whenever the actual gap exceeds the allowable gap—which ever occurs first—the green period is terminated. If the green period is terminated for any reason other than the expiration of the incremental green time (passage time) a memory circuit will record this fact and register one

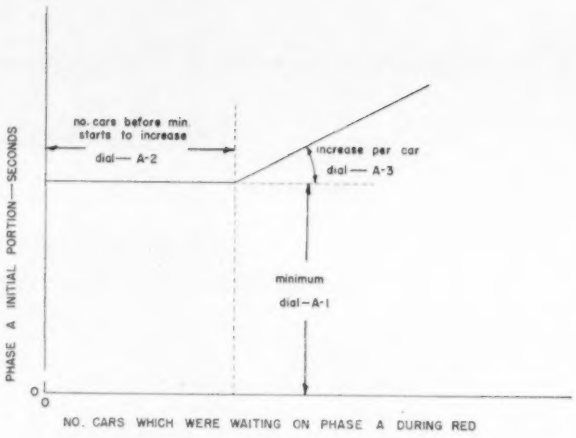


Fig. 2

vehicle waiting on this phase during the red period. This is done to protect the last vehicle to cross the detector since it may not have had time to enter the intersection before the signal changed.

In periods of light traffic when there have been no cars on, for instance, phase B and few cars on phase A, it is possible for the phase A passage time to have timed itself out even though the controller may be in the phase A initial portion. In such cases on actuation of the phase B detector, it is possible for the signal to change from phase A green to phase B green with only the phase A change period intervening, the phase A extendible portion being virtually zero.

Three independent computations of allowable gap are made, one for each of the variables:

Number of cars waiting against the red signal

Length of time waited by the first vehicle waiting against the red

Instantaneous volume of traffic on the green phase

When the time-waiting, cars-waiting, and instantaneous-volume circuits are in their quiescent conditions, the allowable gap is approximately 15 seconds. As traffic demands cause these circuits to depart from their quiescent conditions, the allowable gap is reduced. The allowable gap is measured between two successive detector actuations on the green phase regardless of the approach or lane occupied by the

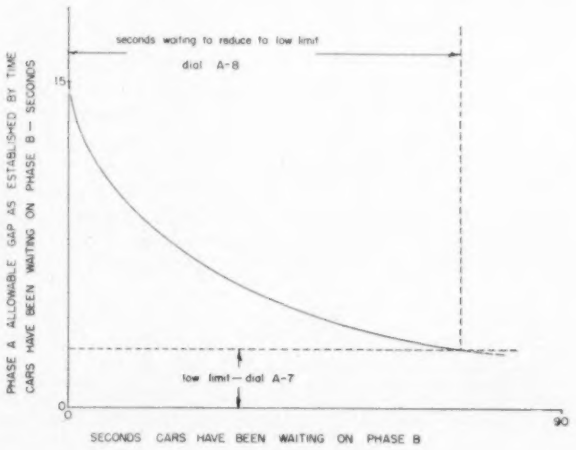

PHASE A ALLOWABLE GAP AS ESTABLISHED BY TIME CARS HAVE BEEN WAITING ON PHASE B — SECONDS
seconds waiting to reduce to low limit
dial A-8
15
low limit— dial A-7
0
90
SECONDS CARS HAVE BEEN WAITING ON PHASE B

Fig. 3

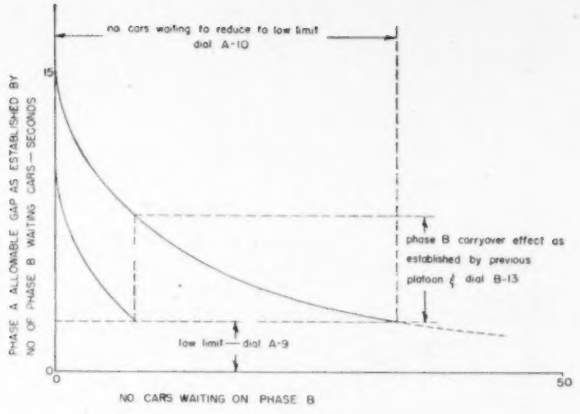

no. cars waiting to reduce to low limit
dial A-10
15
PHASE A ALLOWABLE GAP AS ESTABLISHED BY
NO. OF PHASE B WAITING CARS — SECONDS
phase B carryover effect as
established by previous
platoon & dial B-13
low limit — dial A-9
0
0
50
NO. CARS WAITING ON PHASE B

Fig. 4

vehicle causing the actuation. (All detectors of any phase are connected in parallel).

The *time-waiting* circuit enables the allowable gap to be shortened in accordance with the time the first car in line on the red phase has been waiting. As the time waited increases, the allowable gap is reduced according to an exponential curve. The controls for this circuit are listed in Table 1 and their inter-relationship is shown graphically in Figure 3.

The *cars-waiting* circuit compares the traffic demands of the two phases, decreasing the allowable gap on the green phase as the number of cars waiting on the red phase increases. The three controls for this circuit are listed in Table 1 and the inter-relationship is shown in Figure 4. The third control—carryover—functions in the following manner:

When one phase has a large number of closely spaced cars crossing the detector during its green, this fact is remembered or "carried-over" by the controller during the succeeding red interval. Fewer cars arriving on the red will then be required to reduce the cars-waiting allowable gap of the opposite phase to its minimum. The degree of this carryover effect is controlled by number and the spacing of cars crossing the detector during the green, and by the setting of the carryover dial of the phase being carried over. In Figure 4 the upper curve shows the normal relationship of the Phase A cars-waiting controls. The lower curve shows how the Phase B carryover may affect this circuit. Thus, the carryover effect facilitates the movement of previously-formed platoons through this intersection.

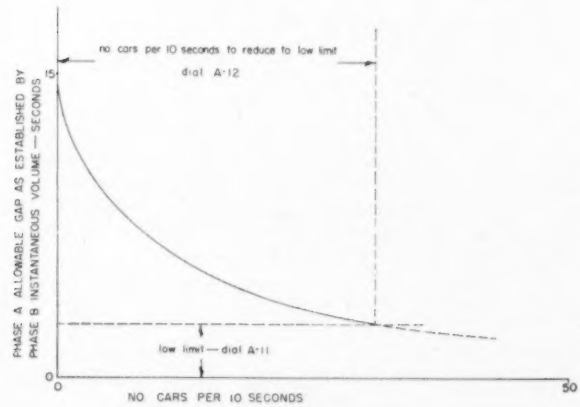


Fig. 5

If the green of the carried-over phase is terminated by the termination of passage time, the carryover effect decays with time until at least one car arrives against the red on that phase. The amount of this decay varies inversely with the carryover dial setting. For a low carryover setting the effect decays to 63% of its initial value in one second. For a high setting, 31 seconds are required. When the green is terminated for any reason other than the expiration of passage time, there is no decay.

The *instantaneous volume* (density) circuit establishes the allowable gap in terms of the actual gap on the green phase. There are two controls for this circuit, as shown in Table 1 and Figure 1. The inter-relationship of these controls is shown by Figure 5. When cars have been crossing the detector at the rate set on Dial A-12 for 10 to 20 seconds, the allowable gap will be reduced to the value set on Dial A-11. If, however, the actual gaps are greater than

$$\frac{10}{\text{Dial A-12 Setting}}$$

the allowable gap will be slightly larger (about 10%) than the actual gap. This circuit facilitates the detection of the end of the closely-spaced group of vehicles. The two dials of this circuit are used primarily to take account of the number of lanes.

The *maximum* circuit sets a maximum limit to the extendible portion when there is a car waiting on the opposite phase. This same maximum is applicable also to the added-initial part of the initial portion if conditions are such as to produce a long added initial. Thus, the maximum time a vehicle will ever be required to wait against the red on the opposite phase will be twice the maximum setting plus the minimum-initial setting. Usually, however, the time will be less than this since the added initial will not ordinarily go to the maximum.

Change Period

The change period dial of any phase permits an appropriate value of the amber period for that phase to be established.

Recall Switch

The recall switch is used to cause the green indication to return to a particular phase under conditions of very light traffic. The closing of the phase B recall switch will cause the controller to be forced into the phase A extendible portion on completion of the phase A minimum initial even though there is no traffic waiting on phase B. Thus, when the phase A passage time expires or when the phase-A-density allowable gap is exceeded, the green will be terminated on phase A, irrespective of the absence of traffic on phase B. This might be done, for instance, to allow pedestrians to cross an intersection where push-buttons are not provided. With both recall switches closed, in periods of light traffic, the controller may operate on a fixed-time basis with the two green periods equal to their respective minimum initial settings.

Part II — Circuit Details

All timing operations in the "volume-density" controller are performed by capacitor charging circuits, the charging time being a function of the resistance and capacitance of the circuit. Thyratrons (gas tubes) are used to detect the completion of the charging period. The various circuits are

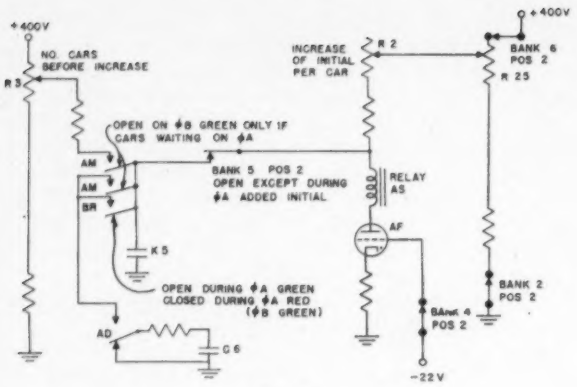


Fig. 6
Added Initial Circuit.

discussed below with the aid of abbreviated schematic diagrams. In these diagrams the voltages shown are typical but vary from one controller to another. The switches marked AR, BR, AM, and BM are relay contacts. All other switches are contacts of a multi-bank stepping switch. The bank and position of each contact are identified. On all potentiometers, "a" indicates the extreme counter-clockwise end, while "c" indicates the clockwise end. Except as noted, circuits of phase A are used for purposes of example in the following descriptions.

Added Initial

Figure 6 is an abbreviated diagram of the added-initial circuit for phase A. The operation of this circuit must be considered in two steps:

1. During the *phase-B green* switches AM are initially closed; capacitor K5 is initially charged to the voltage set on R3; switch BR is closed; all stepping switch contacts are open. On the arrival of the first car on phase A (against the red) switches AM open and remain open. Thereafter, capacitor C6 buckets charge from K5 each time the phase A detector is actuated. Since the charging circuit is open, the bucketing action produces a continual decrease in the voltage of K5.
2. When the controller advances to the phase-A added initial, switch BR opens and switches AM remain open; all of the stepping-switch contacts are closed. The voltage of K5 is applied to the plate of thyratron (gas tube) AF. If only a few cars are waiting on phase A, the voltage of K5 is sufficient to fire the thyratron AF, energizing relay AS. If, however, there are many cars waiting on phase A, most of the charge will have been bucketed off of K5, and it will be necessary for K5 to recharge through R2 and R25 before the voltage will be sufficient to fire the tube. Energizing relay AS advances the controller to the next position.

Minimum Initial

Figure 7 is an abbreviated diagram of the minimum-initial circuit. As the controller advances into the minimum-initial position, switch MM closes momentarily, discharging capacitor K1; this capacitor, therefore, starts the minimum-initial portion in an uncharged condition. The capacitor is then charged from the 400-volt supply through minimum-initial adjusting resistor, R4. When the voltage on K1 rises to a sufficient level, tube AF is fired, energizing relay AS, and advancing the controller to the next position. Tube AS can fire, however, only when either the phase B recall switch

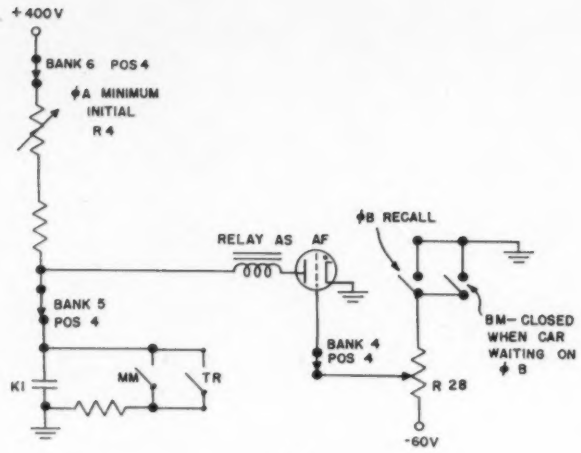


Fig. 7
Minimum Initial Circuit.

or switch BM is closed. Switch BM will be closed only where there is traffic waiting on phase B; when there is no traffic on phase B, switch BM will remain open, holding the controller in the minimum initial position. In special installations where the stop-timing relay is used, energizing this relay closes switch TR and prevents capacitor K1 from being charged until the relay is deenergized.

Passage Time

Figure 8 is an abbreviated diagram of the passage-time circuit. When the controller is in the phase-A extendible portion, capacitor K2 tends to charge through the passage-time adjusting resistor, R6. When K2 reaches a sufficient voltage, tube AF fires, energizing relay AS. If, however, before K2 reaches the firing potential, a car actuates the phase-A detector and thereby instantaneously operates switch AD, K2 is discharged but immediately starts recharging. Inasmuch as no stepping switch contact appears in the charging circuit of K2, K2 can be charging and discharging throughout the entire phase A green, being controlled only by switch AR. This switch is closed with the start of the phase A green.

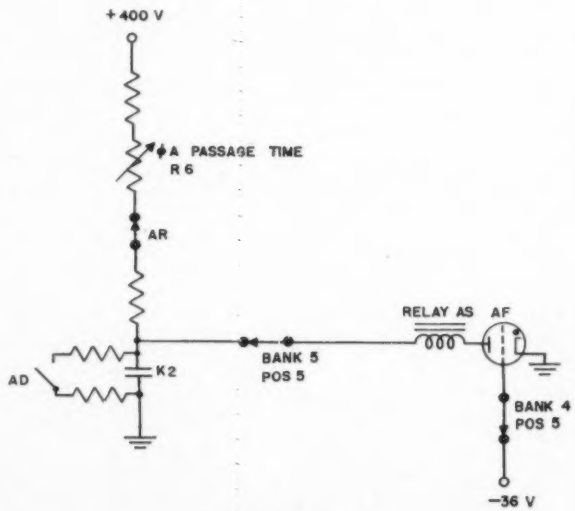


Fig. 8
Passage-Time Circuit.

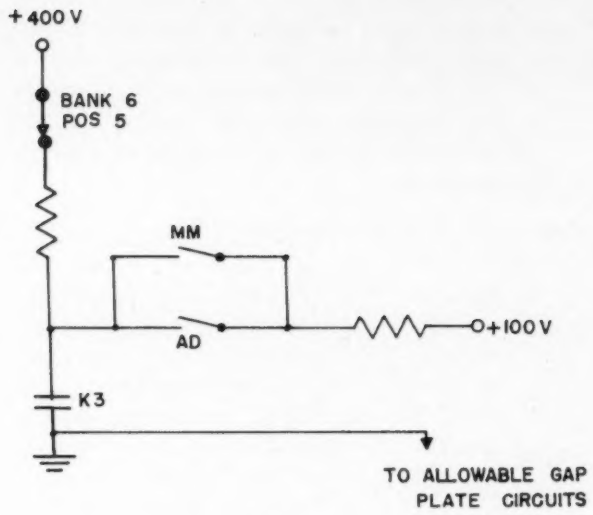


Fig. 9

Gap-Measuring Circuit

Gap-Measuring Circuit

During the (phase A) extendible portion, the actual gaps of traffic on the green phase are measured by the gap-measuring circuit shown in Figure 9. The lengths of the actual gaps, as measured by this circuit, are then compared with the allowable gaps as established by the three allowable-gap circuits. As the controller moves into the extendible portion, switch MM closes momentarily, establishing the potential on capacitor K3 at 100 volts. At the opening of this switch the capacitor begins to charge toward 400 volts. The actuation of the detector on the green phase (here represented by switch AD) returns the capacitor voltage to 100. The amount by which the voltage of the capacitor exceeds 100 is a measure of the time since the last detector actuation (and hence the gap length).

Time Waiting

Figure 10 is an abbreviated diagram of the time-waiting circuit. The plate voltage for tube EF is supplied by the gap-measuring circuit of Figure 9. The length of time the first vehicle has been waiting on the red phase controls the allowable gap of the green phase by establishing the grid voltage. If during the phase A green there is no traffic waiting on phase B, switch BM is closed. This holds the grid of tube EF at —60 volts, thereby preventing the tube from firing regardless of the voltage applied to its plate. After one car has arrived against the red on phase B, switch BM opens. This allows capacitor K11 to charge through the time-waiting resistor, R11, to the voltage corresponding to the minimum allowable-gap set on resistor R8. There is no plate voltage applied to tube EF, however, except in the extendible portion position. When the controller moves into this position and plate voltage is applied, tube EF will fire only when the plate voltage is equal to or greater than the firing potential corresponding to the grid voltage on K11. Firing of tube EF energizes relay EF, advancing the controller to the next position.

Cars Waiting

An abbreviated diagram of the cars waiting circuit is shown in Figure 11. As in the time waiting circuit, the plate voltage for the tube is supplied by the gap-measuring

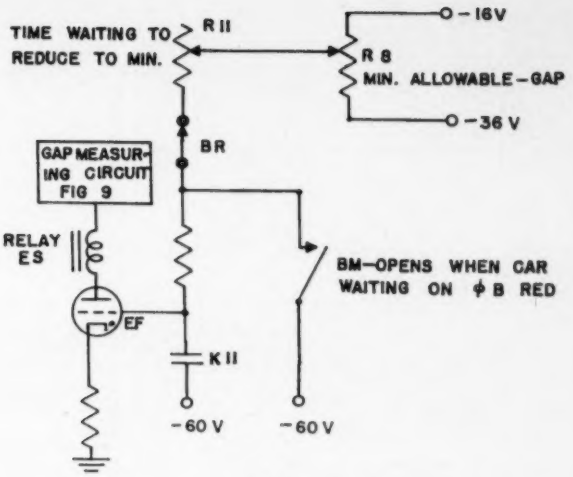


Fig. 10

Time-Waiting Circuit.

circuit of Figure 9. The cars-waiting allowable gap is controlled by establishing the appropriate grid voltage on tube CF. In the absence of cars waiting on phase B during the phase A green, switch BM is closed, capacitor K7 is discharged, and the grid voltage is held at —60. After the

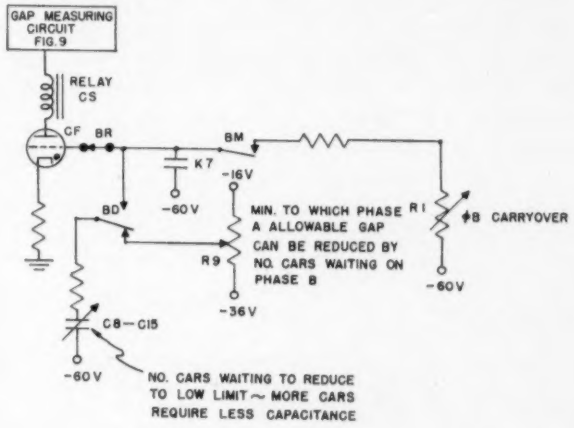


Fig. 11

Cars-Waiting Circuit.

first car has arrived on phase B against the red, switch BM is opened, allowing capacitor K7 to be charged by bucketing action. The capacitor bank C8 to C15 is normally charged to the voltage set on the allowable-gap adjustment resistor, R9. When cars actuate the phase B detector, switch BD is momentarily swung from its normally closed to its normally open position. This allows charge of the capacitor bank C8 to C15 to be bucketed into capacitor K7. When the plate voltage, as established by the gap-measuring circuit, is equal to or greater than the firing potential required by the grid voltage on K7, tube CF fires, energizing relay CF and advancing the controller to the next position.

Instantaneous Volume (Density)

The abbreviated circuit of the instantaneous volume (density) is shown in Figure 12. As in the case of cars waiting and time waiting, the plate voltage for this circuit is supplied by the gap-measuring circuit of Figure 9. The

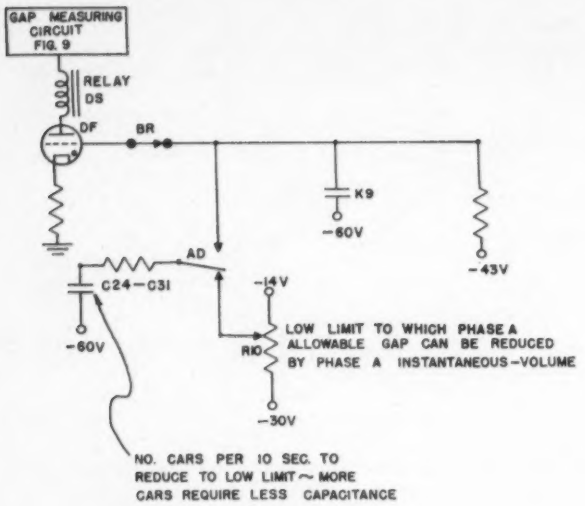


Fig. 12

Instantaneous-Volume (Density) Circuit.

grid voltage for tube DF is supplied by capacitor K9. As the controller moves into the phase A green, switch BR closes connecting the capacitor to the grid of the tube. Normally, at the start of the green, K9 may be charged to a low voltage if immediately prior to the signal change there has been little traffic crossing the phase A detector. If, however, the change takes place as a platoon is moving over the detector, it is possible for K9 to be at a relatively higher voltage at the start of the green. At the start of the green period the capacitor bank C24 to C31 provides a bucketing action, charging to the voltage set on R10, and bucketing charge into capacitor K9. When the plate voltage supplied by the gap-measuring circuit is equal to or greater than the firing potential required by the grid voltage on K9, tube DF fires, energizing relay DF and advancing the controller to the next position.

Maximum

Figure 13 is an abbreviated diagram of the maximum circuit. The grid of tube BF is connected to a fixed bias; the plate voltage is supplied by capacitor K4. At the start of any portion of the cycle K4 is discharged by momentary closing of the switch MM. If there is no traffic waiting against the red on phase B, switch BM remains open, and capacitor K4 remains discharged. If, however, there is traffic waiting against the red, switch BM closes permitting capacitor K4 to charge through resistor R7. When the voltage of K4 reaches the firing potential of tube BF, the tube fires, energizing relay BF and advancing the controller to the next position.

During times when the stop-timing relay (TR) is energized, switch TR in Figure 13 closes, preventing K4 from charging.

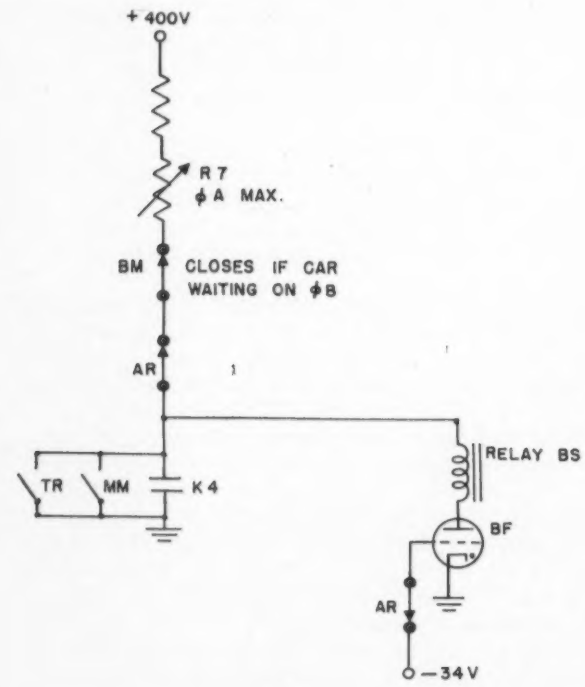
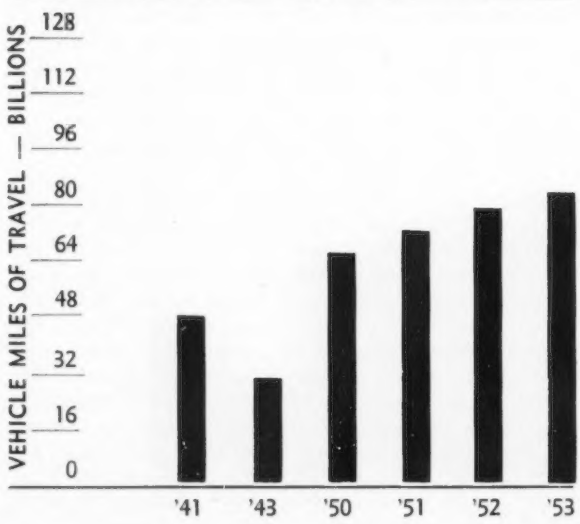


Fig. 13

Maximum Circuit.

Traffic Trends



TRAVEL ON RURAL ROADS FOR THE FIRST FOUR MONTHS OF 1941, 1943, 1950, 1951, 1952 and 1953.

Based on Bureau of Public Roads Data

The Parade of Progress

Prepared by Request Especially for Traffic Engineering

By Robert S. Johnson

Department of Public Relations, General Motors Corporation, Detroit, Michigan

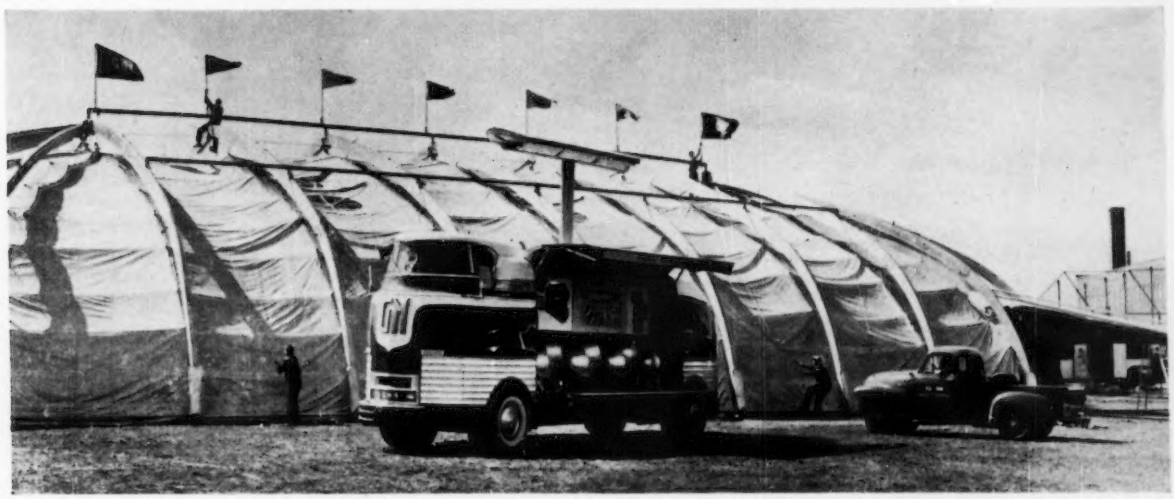


Fig. 1

The Parade of Progress Aerodome tent, with flags flying, is the "big top" for the new General Motors science exhibition. In the foreground is one of the Parade's Futurliners. These are special exhibit vans.

A LINE OF gleaming red-and-silver vehicles rolled out of Detroit in April of this year to carry a message vital to America— today and tomorrow.

The project: the General Motors Parade of Progress, a traveling exhibition of science and industry.

The aim: to show the importance of research and engineering in improving our standard of living and in safeguarding our freedoms.

Perhaps you saw the Parade if you traveled in Ohio, Indiana, or Michigan this spring or summer.

If not, before long you may have an opportunity. For the Parade of Progress is on the road for a cross-country tour—and for an indefinite period.

The entire show, free and non-commercial, has a serious purpose, described in these words by Harlow H. Curtice, president of General Motors:

"The nation's present place of world leadership depends to a great degree on research and engineering.

"Our daily lives, too, of course, are deeply influenced by modern science.

"The Parade of Progress tells that story. For we of General Motors are tremendously interested in promoting a better understanding of research and engineering and what they mean to all of us.

"We hope, in addition, that the Parade will help people to gain a broader knowledge of American industry and its part in our life today.

"Visitors to the Parade's exhibits and stage show will not only enjoy the many vivid and dramatic things they see and hear. They also will come away with a deeper faith in the American way of life—a system that has encouraged the kind of progress that we in this country have seen take place.

"And that is progress for all.

"The first General Motors Parade of Progress exhibition went on tour in 1936. From then until Pearl Harbor in 1941, the Parade stopped in 251 cities and played before audiences of more than 12½ million people.

"Now, in 1953, General Motors has put the new Parade of Progress on tour. It has new equipment, exhibits and stage show. They all highlight the enormous progress the country has made in recent years.

"We would like to help folks see, specifically, how research, engineering, and American progress are solidly linked together.

"And we want, too, to inspire young people—the youngsters with eyes on the future, the inventors, scientists, engineers, and leaders of tomorrow.

"In short, we hope to present, through this Parade of Progress, a picture of America on the move toward better lives for all of us."

In brief, this is what the Parade consists of:

A stage show, in which scientific principles are explained with sparkling showmanship. The stage show is presented six to eight times daily. Each performance lasts 40 minutes.

Twenty-six major exhibits, most of them animated and with explanatory lectures, either by the Parade's lecturers or by their own sound systems. Most of these exhibits are housed in the Parade's Futurliners, large vans built especially for this purpose.

Fig. 2

THE WORLD OF SCIENCE—Basic scientific principles are explained in this exhibit at the G. M. Parade of Progress. Standing in one of the Parade's 12 Futurliners, the lecturer describes the phenomena of friction and the "atmospheric ocean" in which we live.

The Theme Center, a modernistic structure which serves as the Parade's information center. It contains several other exhibits and is a focal point for the entire Parade.

The Aerodome tent, the Parade's "big top" in which the stage show is held. Designed by the GM Research Laboratories Division, the Aerodome is built like an inside-out umbrella. It has a frame of aluminum beams and a fireproof "skin" of canvas impregnated with vinyl plastic.

Forty-four vehicles, including 12 Futurliners, 10 tractor trailers, four trucks and 18 passenger cars. These vehicles transport all equipment and personnel.

Operation of the Parade requires about 55 men. Most of them are young college graduates or otherwise specially-trained, and they have brains, personality and muscle. These young men serve in multiple roles. During performances they are lecturers. At other times they put up the Aerodome and tear it down, drive the vehicles and do all work necessary to keep the Parade running smoothly.

The 1953 Parade of Progress is a new one. But it has an interesting history.

The first General Motors Parade of Progress took to the road February 11, 1936, in Lakeland, Florida, and then swung on to Miami for a big, formal opening a few days later.

This was the start of a tour that during the six years until December, 1941, was to take the Parade across the nation.

Charles F. Kettering, famous inventor and former research director for General Motors, sparked the idea and personally put on the Parade's first stage show. (Mr. Kettering is now a General Motors director and research consultant).

The original idea behind the Parade was to bring the story of industry and science to people in communities throughout the country.

This theme guided General Motors in planning the exhibition: "Who serves progress serves America."

In 1936, the Parade played before some three-quarters of a million people in 12 states. The next year attendance began to soar. There were 2.1 million visitors in 1937, another 2.5 million in 1938, and 3.2 million in 1939. More than half a million saw the Parade in 1940 when, in April, the show went back to Detroit for rebuilding.

This move was prompted by the Parade's growing popularity. GM officials decided to enlarge the Parade for reopening in 1941. By this time, the Parade had covered most sections of the country as well as parts of Canada, Mexico, and Cuba. In all, the Parade had by then toured 208 cities and been applauded by almost 9½ million spectators.

In 1940, GM built new Futurliners, and the Aerodome tent was constructed. Back on tour in February, 1941, the Parade drew even greater crowds than before. By December of 1941, the Parade had been to 43 more cities and had an attendance of more than three million. This was roughly half the population of the communities visited.

In December, 1941, after Pearl Harbor, the Parade was disbanded.

The Parade's science and research exhibits have been designed from the beginning to show how American industry contributes to the nation's growth and strength.

Many of the exhibits serve, too, to inspire the youth of America through dramatization of the opportunities in industry. Young people are encouraged to feel that "the world is not finished."

In 1952, GM decided to build a new and larger Parade of Progress. A new generation had come of age. Such developments as jet propulsion, radar, and television had stirred the imagination of the public and had awakened a new interest in science.

Thus, new exhibits were planned to tell this story. The Futurliners were improved, and a new stage show worked out.

Fig. 3

"Old Scout," one of the most popular exhibits in the Parade of Progress really runs—though it dates back to the early 1900's. This 1902 Oldsmobile won the first transcontinental race in 1905 in 44 days!

Fig. 4

Inside the Aerodome, the Parade of Progress stage show goes on to a packed house. The show—just one feature of the entire Parade—lasts 40 minutes. It highlights some of the latest advances in science.

Now the Parade is again under way to help the people of America understand what modern industry, research, and engineering mean to their everyday lives.

Now let's look at the Parade more closely.

The red and white Futurliners, housing the Parade's major exhibits, are one of the leading attractions of the exhibition. Here are the essential facts about the Futurliners:

CONSTRUCTION—The Futurliners were built by the GMC Truck & Coach Division and the Fisher Body Division in cooperation with the GM Styling Section and the GMC Research Laboratories Division.

DIMENSIONS—They are 33 feet long, 8 feet wide and 11 feet 4 inches high. The wheelbase is 248 inches. Frame is 32 feet long. There are conventional cross bars for frame strength. Outriggers are attached to the main frame to hold the body.

DRIVER'S COMPARTMENT—The driver's compartment bears some resemblance to the cockpit of an airplane. It is entered through a door at the right front of the vehicle. A stairway leads up to the compartment, which sits high above the wheels.

The driver's eyes are 10 feet above road level. He has a single seat which is located at the front center of the compartment. Behind him are twin relief seats for assistants or special guests.

AIR CONDITIONING—The compartment is kept at a comfortable temperature by a Frigidaire air conditioner similar to that available on some 1953 GM passenger cars.

STEERING—Futurliners are equipped with power steering developed by the Saginaw Steering Gear Division. The steering wheel is mounted on a streamlined column at the front center of the compartment.

WINDSHIELD—The windshield curves almost completely around the compartment. It is of green-tinted E-Z Eye glass, Futurliner windshields are the largest E-Z Eye installations ever made.

AUTRONIC-EYE—Futurliners are equipped with the Guide Lamp Division's Autronic-Eye, which automatically lowers the headlight beams when another vehicle approaches, then raises the lights again.

OTHER CONTROLS—Foot pedals for the brake and accelerator are treadle type with corrugated rubber treads, set off by chrome plates. There is no clutch.

TRIM—Upholstery of the compartment is of vinyl coated fabric in two-tone lime and hunter green.

ENGINES—Each Futurliner is powered by a 145 horse-

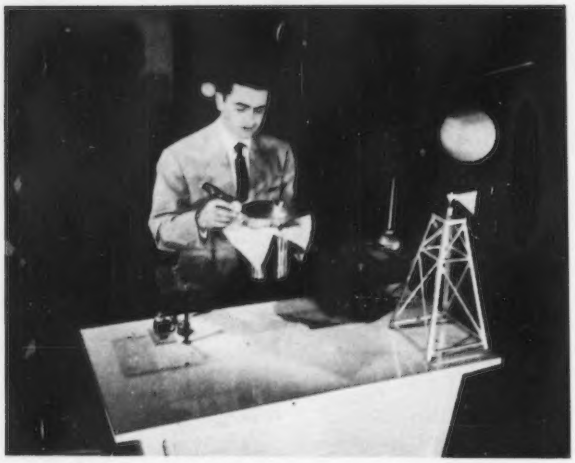


Fig. 5
Here's the "cold stove" that fries an egg quickly but doesn't melt ice cream placed inside the stove. It's one of the acts in the Aerodome Show.

power, 302 cubic inch GMC gasoline engine, which is located directly under the driver's compartment. Compression ratio is 7.3 to 1. Bore and stroke are each four inches. They produce 262 foot pounds of torque at 1,400 revolutions per minute. The engine may be reached for servicing by a large door which is located at the left front of the vehicle.

TRANSMISSION — Transmissions are Dual-Range Hydra-Matic manufactured by GM's Detroit Transmission Division.

GASOLINE TANKS—There are two gasoline tanks, each holding 45 gallons, located in front of the rear wheels.

Other Safety Features

DUAL FRONT WHEELS—These increase the roadability and safety of the Futurliners.

RUBBER BUMPERS—Front and rear protection is given by steel plates covered with rubber. Rubber rails also run around the base of the body. These rubstrips are an inch thick and 3½ inches wide.

Special Show Equipment

HORIZONTAL EXHIBIT DOORS—Sides of the Futurliners are large doors which open by means of ⅓ horsepower motors—to reveal the exhibits built inside. The top door, 45 inches wide, swings upward to become a marquee, while the bottom, 36 inches wide, swings downward to form a stage platform. The doors are 16 feet long.

LIGHTING TOWERS—Steel and aluminum fins 15 feet long form the show lot's lighting fixtures when the Parade is on a show location. Shaped like an inverted canoe, each fin, when not in use, nests in a trough atop a Futurliner, becoming part of the top of the vehicle. When in use, the fin rises 18 feet above the ground, throwing down a broad canopy of light. The towers are raised and lowered by ½ horsepower motors.

This light comes from thirty 40-watt fluorescent tubes arranged in six banks of five tubes each. At each fin end two 250-watt incandescent lamps are installed.

Other Vehicles of the Parade of Progress

Ten highway type tractors transport the Parade's trailers. Five are Chevrolets, the other five GMC's.

THE CHEVROLETS—These are two-ton Model 6103's, with 105-horsepower engines. They have four-speed Syncro-Mesh transmissions with two-speed rear axles. A special 50-gallon gasoline tank is mounted on the left side of the chassis in addition to the standard 17½-gallon tank behind the cab.

THE GMC's—They are two-and-a-half ton Model 470-30's with 145-horsepower engines. They have five-speed transmissions and electrically operated two-speed rear axles. Gas capacity is the same as that of the Chevrolet trucks.

THE TRAILERS—The ten trailers are painted in the Parade's traditional red and white colors, but have additional aluminum trim. Three have high beds, three others are low-bed and four are special types. They carry baggage, exhibits, lockers, washing and toilet facilities, folding aluminum and cloth chairs, a workshop and the Aerodome. Largest of the trailers, 32 feet long, serves as a stage for the Aerodome science show.

OTHER TRUCKS—The Parade also has four trucks, three of which are Chevrolets and one a GMC. Of these, three are standard two-ton models specially equipped to carry a sound movie projection booth, the "Old Scout" automobile exhibit, power winches to raise the Aerodome and work benches and service equipment. The fourth is a half-ton Chevrolet pickup truck.

All Parade vehicles are painted two-tone white and red. The body color is Target Red and the tops are Arctic White.

As a safety measure, the two Cadillac convertibles and the service truck are equipped with two-way radios. The other vehicles in the Parade have receivers. Thus all can easily "get the word."

The Parade's stage show is presented in the Aerodome—something new in "big tops."

The Aerodome—resembling a dirigible hangar—is 152 feet long, 80 feet wide and 26 feet high. It seats 1,250.

There are no poles to get in the way, no guy wires outside, no stakes to stumble over.

Designed by the GM Research Laboratories Division, the Aerodome has its "skeleton" on the outside, its "skin" on the inside.

The skeleton is a spot-welded and riveted, box-girder frame. It is entirely of an aluminum alloy that is as strong as steel but only one-third as heavy.

Suspended from the skeleton, by ropes and pulleys, is the silver-colored skin. This is canvas, coated with vinyl plastic. It is fire, water and light-proof. Nor will it shrink or stretch.

Here's how they put up the Aerodome:

The men of the Parade take the framework's sections from a specially built trailer. The frame consists of 56 pieces of metal plus 28 arched girders and 28 tubular connecting links. About 25,000 spot welds were required on the frame.

Next, the men lay most of the frame on the ground and bolt it together. A winch then hoists up the frame. At the top of the frame at each end is a semicircular piece of metal called a "spider." When the main frame is up a crew member goes aloft and bolts the end girders into place on the spider's metal projections or "ears."

Other crewmen, meanwhile, have been lacing the skin's five large pieces together. (The skin's weight: 4,594 pounds; area: 3,445 square yards).

Then, with snaps and pulleys, the skin is pulled into place. It slides evenly along in tracks on the underside of the girders. Finally, all vertical seams and horizontal bands are roped with some 2½ miles of hemp line.

(Continued on page 353)

"Safe" Highway Capacity

By Herbert S. Levinson (Jun. Mem., ITE)
Associate Engineer, Wilbur Smith and Associates, New Haven, Connecticut

THE EVALUATION OF HIGHWAY CAPACITIES, has been one of the most challenging and controversial phases of modern roadway engineering. It has been only in recent years, that through the integration of semantics with intensive analysis of field observations that real progress has been made. In the past, the utilization of the formula

$$C = \frac{5280V}{S}$$

to determine the capacity of a roadway has yielded great variances in the results obtained because of the innumerable assumptions of the relationship between the vehicular spacing in feet, S, and the velocity in miles per hour, V. These early studies have also largely neglected the "human factor"—actual minimum time spacings between drivers of successive vehicles—in the determination of "maximum" roadway capacities.

However, it is still possible to advantageously apply the above relationship to highway capacity problems if first a new concept, the "maximum safe capacity," is developed. For any given roadway condition, the "safe" capacity is based on driver perception—reaction time, and vehicular braking performance. It becomes axiomatic that the *maximum practical capacity of any roadway must never exceed the corresponding "maximum safe capacity."*

The Nature of Safe Capacity

Many of the early studies have frequently based safe capacity on "the ability of a vehicle to stop if an unexpected barrier suddenly appears in the approaching section of the roadway." Such conditions occur relatively infrequently, hence any results thus obtained tend to be unrealistic.

As volumes on a road increase and "capacity" is reached, speed differentials between successive vehicles approach zero. Thus, this study assumes a "lead" car, Vehicle 1, and a "tail" car, Vehicle 2, as shown in Figure 1, traveling at an initial speed of V miles per hour. Vehicle 1, stops in the minimum possible stopping distance, S_1 while Vehicle 2 stops at a standard stopping rate, its stopping distance being S_2. The safe spacing S_1, between the two vehicles becomes the difference between S_2 and S_1 increased by 20 feet to account for a car length and clearance. Mathematically, that is, $S = S_2 - S_1 + 20$. (1)

Analytical Relationships

Applying standard relationships between velocity, perception-reaction time, deceleration friction and stopping distances, it is possible to determine values for S_1 and S_2.

For the *minimum* stopping distance, S_1, the deceleration, d is assumed to be 22 feet per second, (a maximum practical deceleration) and it is assumed that perception and reaction time is negligible. S_1 is found to be $.049V_2$:

$$S_1 = \frac{(1.47V)^2}{2d} = \frac{(1.47V)^2}{2 \times 22} = .049V^2 \quad (2)$$

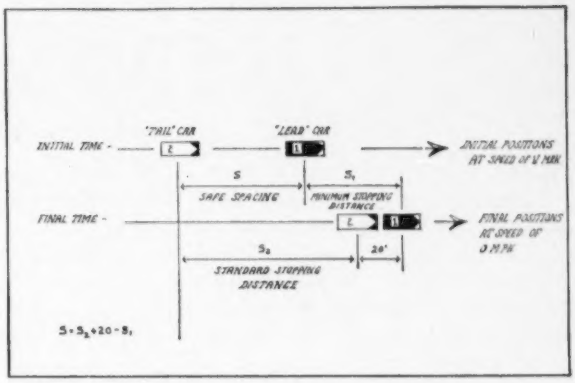


Fig. 1
Initial and final vehicle spacings.

The *standard* stopping distance may be evaluated from the relationship:

$$S_2 = 1.47Vt + \frac{V^2}{29.92f} \quad (3\text{-}1)$$

A pavement friction value, f, of 0.5, and a driver perception-reaction time of 1.5 seconds, both conforming to AASHO policies, when substituted in equation (3-1) yield a value for S_2 of $2.20V + .0666V^2$

$$S_2 = 1.47\ (1.5)V + \frac{V^2}{29.92(.5)} = 2.20V + .0666V^2 \quad (3\text{-}2)$$

By substitution of values obtained for S_2 and S_1 in equations (2) and (3) into equation (1), it is possible to express S entirely as a function of the velocity, V.

$$S = (S_2 - S_1) + 20 = (2.20V + .0666V^2) - (.0490V^2) + 20 \quad (4\text{-}1)$$

$$S = .018V^2 + 2.20V + 20 \quad (4\text{-}2)$$

The "safe" capacity of a highway, $\frac{5280V}{S}$ then becomes:

$$C = \frac{5280V}{.018V^2 + 2.2V + 20} \quad (5)$$

To determine at what speed this expression has its maximum value, it is necessary to differentiate C, with respect to V, set the differential equal to zero, and solve the resultant equation for V: That is:

$$\frac{dC}{dV} = \frac{5280\ (.018V^2 + 2.2V + 20) - 5280V\ (.036V + 2.2)}{(.18V^2 + 2.2V + 20)^2} \quad (6\text{-}1)$$

or simplifying

$$\frac{dC}{dV} = \frac{5280\ (20 - .018V^2)}{(.018V^2 + 2.2V + 20)^2} \quad (6\text{-}2)$$

$$\text{If } \frac{dC}{dV} = 0; \text{ then } 20 - .018V^2 - 0; \text{ or } V^2 = \frac{20}{.018} \quad (6\text{-}3)$$

(Continued on page 354)

Toll Highways Are Legislative Issue in Many States

By The Editorial Staff

This magazine subscribes to the legislative research and analysis service offered by Bethune Jones of Red Bank, New Jersey. The following is based on a special report from this service issued this past spring.

TOLL ROAD DEVELOPMENTS, both in and out of state legislatures, are continuing as issues of major interest in many states throughout the country.

Analysis of reports available at this writing reveals that legislative proposals to grant or pave the way for new or broadened toll financing of highway facilities have been enacted thus far this year in Colorado, Kansas, New York and Washington.

Such proposals were pending in California, Connecticut, Delaware, Illinois, Iowa, Michigan, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, Oklahoma, Pennsylvania, Rhode Island, Texas and Wisconsin, and expected in Alabama and Florida.

Similar legislation failed of enactment in Maryland and New Mexico and was vetoed in Arkansas.

Meanwhile, administrative, judicial and other action bearing significantly upon the toll road trend is reported from a number of states.

Current and prospective developments, on a state-by-state basis, include the following:

ALABAMA: Legislature, convening in May, will be asked to appropriate funds for toll road feasibility surveys. A state legislative interim study committee favors toll roads for the state "provided they are self-supporting and self-liquidating." Possibilities include a $100,000,000 toll highway from Decatur through Birmingham to Mobile.

ARKANSAS: In vetoing a bill which would have created a State Turnpike Authority to investigate the feasibility of toll roads in the state, Governor Cherry objected that the proposed new agency might interfere with the State Highway Commission.

CALIFORNIA: Toll highway financing contemplated by a number of pending bills, including a proposal to create a State Toll Highway Authority with power to issue revenue bonds for the construction of toll highways. Another measure would authorize issuance of $3,000,000,000 in toll road bonds.

COLORADO: A legislative resolution asked the State Highway Commission to submit to the State Legislature next January data needed for a bond issue to finance a toll highway tunnel at one or more sites under the continental divide. A companion measure approved earlier by the Colorado lawmakers directed the commission to determine a site between Loveland and Berthoud passes west of Denver.

Meanwhile, traffic on the new Denver-Boulder toll highway is continuing far in advance of expectations. The two-millionth vehicle went through the turnstiles on March 23, bringing total toll receipts to $495,167.26. State Highway Engineer Mark U. Watrous said the traffic was continuing to show slight gains and was far ahead of the most optimistic predictions. He previously had estimated that the turnpike would "pay itself out" by 1975, five years ahead of schedule.

CONNECTICUT: Proposed legislation would set up a thruway and expressway program that eventually would cost the state $400,000,000.

Initial phase of the proposed program, already given approval by the state legislative roads, rivers and bridges committee, provides for a $135,000,000 Fairfield County Thruway to run from Greenwich on the New York line to West Haven and for a $65,000,000 extension through eastern Connecticut to the vicinity of South Killingly, where it will connect with Route 6 near the Rhode Island line.

The measure at this writing was before the state legislative finance committee for approval of a $200,000,000 bond issue, to be repaid by tolls, to finance the Fairfield County Thruway and the eastern Connecticut extension. Financing for the balance of the program would be left to future legislatures.

Under the proposed Connecticut legislation, all thruways would be designated as toll roads and the toll receipts from one section could be used for highway construction in any other section of the state.

DELAWARE: Enactment of enabling legislation to permit the construction of a toll highway linking the Delaware Memorial Bridge with the Chesapeake Bay Bridge has been advanced by the Delaware State Highway Commission. The Delaware-Maryland terminus would be in the vicinity of Warwick, Maryland.

A pending Delaware bill would authorize an additional $15,600,000 worth of revenue bonds for construction of approaches to the Delaware Memorial Bridge.

FLORIDA: A third engineering report proclaiming the feasibility of a north-south Florida toll highway was recently received by the State Road Board. Drafted by Capitol Engineering Co., Dillsburg, Pennsylvania, the report "confidently predicted" that a proposed 362-mile central Florida turnpike would yield sufficient toll revenue to retire a $199,000,000 bond issue in 12 years. The report said the project could be accomplished by private financing, a special commission established by the legislature, or by the existing State Improvement Commission.

No immediate action was taken by the Florida board on the toll road proposal. Chairman Richard H. Simpson said the board had it "under consideration and it still is under consideration." Previous engineering reports estimated

that a coastal route toll road from Jacksonville to Miami would cost $180,000,000.

Simpson previously had stated that while the road board and the State Improvement Commission have the combined authority to carry out a toll road project, members felt that the state legislature should act on it. He said that a toll road plan, if decided upon, probably would call for the creation of a new turnpike authority to administer it. The Florida legislature convened April 7.

GEORGIA: Introduced in the Georgia legislature but not reported enacted was a bill to repeal a 1952 state law authorizing a toll superhighway between Cartersville and the Tennessee line. Plans for the project were shelved last year after receipt of engineering reports of insufficient potential traffic for financing.

ILLINOIS: No action yet taken in the Illinois legislature on Governor Stratton's recommendation for "immediate and serious consideration to the possibility of constructing super or specialized traffic highways to be financed by tolls."

INDIANA: Preliminary preparations in progress under existing enabling legislation for a 150-mile toll superhighway across northern Indiana. Hopes previously expressed that construction may be started by early summer of 1954. Connecting on the east with the toll highway being constructed across northern Ohio, the Indiana project will be an important link in a chain of toll turnpikes carrying traffic between New York and Chicago.

IOWA: Proposed legislation would appropriate $100,000 for a feasibility study of an east-west toll road across the state. The study would be made by a state legislative interim committee, directed to report to the 1955 session. Doubt that Iowa toll roads would pay for themselves was previously expressed by the majority of a toll road study committee named by Governor Beardsley.

KANSAS: A toll road enabling act creating a five-member commission to study and, if found feasible, finance and construct toll highways was enacted by the state legislature. The commission will have up to $25,000 for its studies annually.

KENTUCKY: Preliminary engineering surveys to determine the feasibility of a Kentucky toll highway are being made under existing enabling legislation. Most likely initial project would be a 40-mile, $22,000,000 toll turnpike from Louisville to Elizabethtown, with plans for ultimate extension to Nashville. There also has been discussion of the possibility of linking such a route with a toll highway from Louisville to Cincinnati and Toledo. Another possibility would be a spur through Lexington to the south.

MAINE: Marketing being awaited at this writing of some $75,000,000 in revenue bonds by the State Turnpike Authority to refinance its present outstanding debt and to finance extension of the turnpike from Portland north to Augusta. Approximately $60,000,000 of the total would be used to finance the projected 60-mile extension.

MARYLAND: Proposed provisions for toll financing were dropped from the long-range highway program legislation enacted by the state legislature. The approved bill provided for a 1-cent gasoline tax rate boost, higher motor vehicle registration fees and bond issuance, but left for future legislative sessions action on any new authority for toll roads.

MASSACHUSETTS: Preparations continuing under existing legislation for an east-west cross-state toll highway expected to cost approximately $200,000,000.

MICHIGAN: State Senate passed and sent to the House a bill to create a five-member authority to study, finance and construct toll highways. The agency would be limited in locating toll roads under the bill, which designates the locations as between Detroit and Chicago, Detroit and Toledo and Detroit and Bay City. An appropriation of $500,000 from State Highway Department funds would be provided for studies, surveys and planning.

An amendment written into the Michigan bill would specifically protect state funds in event toll charges were insufficient to pay the interest and principal on toll road revenue bonds.

MISSOURI: A proposed toll road enabling act faced a doubtful fate in the state legislature, despite backing for such a measure from Governor Donnelly and an interim committee which studied the issue last year.

The enabling bill was amended in the State Senate to strike out a phrase that would have made the proposed turnpike authority an instrumentality of the state. Backers of the amendment argued the bill would violate a state constitutional provision that all highway-use tax revenues must go into the state highway fund.

NEBRASKA: Pending legislation would create a three-member authority with power to build toll roads financed by revenue bonds.

NEW HAMPSHIRE: Proposed legislation contemplates a $40,000,000 toll superhighway for central and eastern New Hampshire. The plan would provide a 40-mile highway from the Massachusetts border to Concord, and an extension of the present New Hampshire Turnpike from Portsmouth to Rochester.

Meanwhile, in contrast to favorable experience with toll roads elsewhere, the present rate of income from the existing New Hampshire Turnpike along the coast from the Massachusetts line to the Maine border has been reported as insufficient to cover amortization requirements solely from toll revenues. The project was financed by state-backed bonds.

NEW JERSEY: State Senate passed and sent to the House an administration backed bill to permit the New Jersey Highway Authority to charge tolls on any feeder road to the Garden State Parkway provided the feeder is not an existing public highway taken over by the authority. The measure is designed to permit extension of the northern terminus of the parkway from Paramus to the New York State line.

Construction of the $285,000,000 Garden State Parkway project is continuing under temporary financing procedures, with the 165-mile route from North Jersey to Cape May scheduled for completion by the summer of 1954. Permanent financing through issuance of revenue bonds will be initiated after the State Supreme Court hands down a ruling in pending litigation testing the constitutionality of state guaranty of the bonds. A lower court decision upheld the validity of the law providing for state-backing of the bonds, as approved by the electorate last year.

NEW MEXICO: Legislature rejected a proposed toll road enabling act. Chairman Ralph Jones of the State Highway Commission previously had expressed doubt that toll roads would be feasible for the state to present because of insufficient traffic.

NEW YORK: A new law authorizes a $40,000,000 revenue bond issue for a parkway construction and improvement program in Nassau County and provides for imposi-

tion of a 10-cent toll on the Southern State Parkway to amortize the bonds.

Authority over the Southern State Parkway was transferred by the bill from the Long Island State Park Commission, which operates state parks in Nassau and Suffolk counties, to the independent Jones Beach State Park Authority. The toll, which will be collected at the Queens-Nassau line, will be limited to 10 cents pending retirement of the bonds unless a higher toll is needed for operating expenses and debt service.

The measure will permit the authority to reconstruct the Southern State Parkway from a four to a six-lane highway between the Bolt Parkway in Queens and Wantagh Avenue in Nassau, to reconstruct the Meadowbrook State Parkway and the Wantagh State Parkway from Merrick Road to the Southern State Parkway and to extend the Meadowbrook State Parkway to the Northern State Parkway. After retirement of the bonds, control over all of these parkways will revert to the state.

NORTH CAROLINA: Proposed legislation would add five members of the State Highway Commission to membership of the North Carolina Turnpike Authority. Created under a 1941 law, the authority now consists of five members, one of whom is the chairman of the highway commission. The pending bill would set up a 10-member agency, on which the highway commission would have six representatives.

The authority has not yet exercised its power to issue revenue bonds for toll roads. It is awaiting the outcome of engineering studies on a proposed turnpike running from the Gastonia area, through the Charlotte area and west of Winston-Salem to the North Carolina line near Mt. Airy. Another possible route scheduled for later study would connect with the Piedmont route and extend through the Greensboro area to the Raleigh-Durham area.

OHIO: Bills pending in the Ohio legislature may provide further headaches for the Ohio Turnpike Commission, at this writing seeking a way out of legal snarls resulting from a Second District Court of Appeals order requiring both asphalt and cement bids for paving its projected 241-mile cross-state toll superhighway.

While seeking relief from the State Supreme Court from the lower court action, the Ohio commission canceled bids on 13 contracts for about $70,000,000 worth of cement paving. Meanwhile, state lawmakers took up consideration of a measure proposing a probe of all aspects of the toll road situation in the state. Another legislative proposal called for an annual "detailed audit and inventory" of turnpike commission affairs by the state auditor.

Difficulties resulting from the paving issue litigation probably will delay any further immediate consideration of the possibility of an Ohio turnpike branch from Toledo to Cincinnati and other possible extensions.

OKLAHOMA: Lower branch of legislature passed and sent to State Senate a bill to authorize three new toll roads in the state. The measure would change the present Oklahoma Turnpike Authority into a statewide organization with power to plan, finance and build three new toll expressways.

Proposed new toll routes would be two extensions of the Oklahoma City-Tulsa turnpike southwest from Oklahoma City to Randlett through Chickasha and Lawton and northeast from Tulsa to the Missouri line, and a completely new road from Oklahoma City toward Wichita, Kansas.

Meanwhile, the scheduled opening date for the Oklahoma City-Tulsa toll superhighway was put off from April 17 to May 16, to permit completion of the median strip and the shoulders.

PENNSYLVANIA: No legislative action yet on Governor Fine's suggestion for consideration of the possible extension of the Pennsylvania Turnpike to northeastern Pennsylvania as an inducement to have heavy industry locate in the financially stricken anthracite region. Existing enabling legislation provides for several other turnpike extensions and construction is proceeding on a $65,000,000, 33-mile Delaware River extension of the turnpike.

Construction of test median barriers between east-west lanes of the Pennsylvania Turnpike at known danger points was recommended by a joint state legislative committee which investigated the turnpike safety issue.

RHODE ISLAND: Toll road legislative proposals were chilled in Rhode Island when the Governor's Committee to Study Toll Roads submitted a report expressing belief that toll roads would not be financially feasible in the state at present because of insufficient potential traffic to support them.

The study group pointed out that Rhode Island is not a "corridor" for heavy out-of-state traffic and does not have big "traffic generating areas" at its borders. Recommendations by the committee, however, included a proposal for initiation of an interstate committee to work for a southern New England shore resort and tourist route system.

TENNESSEE: No toll road enabling legislation had been introduced in the state legislature at this writing, although there had been previous talk of the possibility that such a measure would be proposed.

TEXAS: Governor Shivers recently made it clear that he favored a statewide toll highway authority bill and opposed any legislation to create a special authority for a single toll road project. He also expressed displeasure over the State Highway Commission's opposition to toll roads generally.

A statewide toll road authority bill had earlier been rejected by the Texas House, which instead passed and sent to the Senate a Dallas-Fort Worth toll road authority bill. The latter at this writing was pending in the Senate, together with another bill which would revise an old state law permitting private toll road authorities to provide that such authorities should be non-profit making to individuals.

VIRGINIA: Plans for construction of toll highways in Virginia by private corporations suffered a setback when the State Highway Commission announced it would not accept capital stock of any private turnpike corporation. Acceptance of such stock by the state had been sought by several private corporations in order to permit them to issue tax-free bonds.

Affected by the commission's action were the Virginia Interstate Turnpike Corporation that had proposed a 200-mile toll road through eastern Virginia; the Old Dominion Turnpike Corporation, planning a 75-mile road through southwest Virginia, and the Commonwealth Turnpike Corporation, planning a Richmond-to-Petersburg toll project.

State Highway Commissioner James A. Anderson declared that the public "clearly demonstrated" at a recent hearing conducted by a toll road policy study subcommittee of the Virginia Advisory Legislative Council that "if toll roads were to be constructed in Virginia they should be constructed and operated by the State Highway Commission."

It was also brought out that the Virginia attorney general had expressed "grave doubt" as to the legality of either the state or localities accepting the capital stock of private turnpike corporations. Although the opinion was given last June, it was not made public until announcement of the commission's resolution against the acceptance of such stock.

WASHINGTON: Legislature enacted bills broadening the powers of the State Toll Bridge Authority to permit it to finance and build toll roads in much the same manner it now constructs toll bridges, and authorizing it to study and construct, if found feasible, a toll highway from Tacoma to Everett by way of Seattle. This legislation carried a $500,000 appropriation for the study and other preliminary costs.

WEST VIRGINIA: Prospects for eventual four-laning and extension of the two-lane toll expressway now being constructed between Charleston and Princeton by the West Virginia Turnpike Commission were dampened by recent developments expected to slow plans for construction of Virginia toll highways which would connect with it.

WISCONSIN: Proposed legislation, backed by Governor Kohler and the highway advisory committee of the State Legislative Council, would provide for a study of the feasibility of a $175,000,000 toll road across Wisconsin to speed traffic between Chicago and the Twin Cities.

THE PARADE OF PROGRESS

(Continued from page 348)

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"We have indeed accomplished much in America. We have built higher, we have flown faster, we have engineered the most progressive land on the face of the earth. Now, as our horizons become brighter, let us not allow our appreciation to be dulled. . . .

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ITE CALENDAR

24th ANNUAL MEETING
Hotel Statler
Buffalo, New York
September 27 - October 1, 1953

25th ANNUAL MEETING
Kansas City, Missouri
September, 1954

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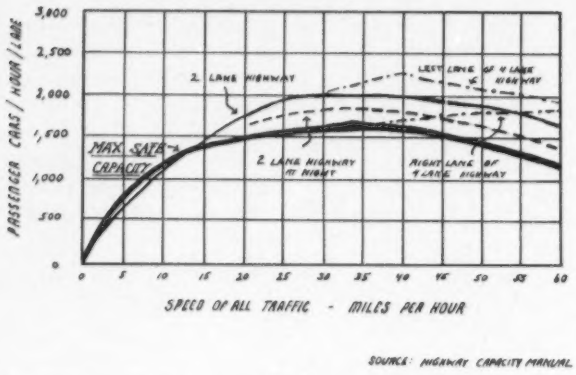
"SAFE" HIGHWAY CAPACITY

(Continued from page 349)



SOURCE: HIGHWAY CAPACITY MANUAL

Fig. 2
Observed and calculated capacities.

and V for maximum C equals the

$$\text{square root of } \frac{20}{.018} = 33.6 \text{ m.p.h.} \qquad (6\text{-}4)$$

The greatest value for *maximum safe capacity* occurs when vehicles in the traffic stream are traveling at a speed of 33.6 miles per hour. From equation (5) this *maximum* value is found to be 1560 vehicles per hour (an average time spacing of 2.3 seconds between successive vehicles).

Interpretation of Results

Variations of capacity with speed are presented in Figure 2. It should be noted that as speeds increase, there is virtually no reduction in the "safe" capacity. However, for speeds, under 20 miles per hour, considerable reductions occur. At 10 miles per hour, for example, there is almost a 25 per cent reduction in the safe capacity. It appears that a design value for safe capacity of 1500 vehicles per hour is reasonable for speeds between 20 and 55 miles; for greater speeds, design values should not exceed 1400 vehicles per hour.

Observed vehicle spacings on American roads, as indicated, follow similar patterns although somewhat greater capacities are experienced. The curve for a two-lane highway at night fits the calculated curve relatively well.

The "maximum safe capacity" can be considered as the upper limit of the practical or design capacity of a roadway. When the volume of a facility exceeds 1400 to 1500 vehicles per lane per hour, depending on prevailing speeds, (the recommended "design values" for safe capacity) — the inherent safety of the facility is reduced. This is true although based on successive stream spacings it is possible for additional vehicles to be accommodated. *Design capacity for a roadway should never exceed the corresponding maximum safe capacities.*

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TRAFFIC NEWS

Vice President Nixon Addresses IRF Pan American Highway Dinner

Vice-President Nixon, Senator Homer Ferguson of Michigan and Carlos Lazo, Minister of Public Works and Communications of Mexico, were among the principal speakers at an International Road Federation "Pan American Highway Dinner" June 15 at the Mayflower Hotel in Washington.

The dinner marked the inauguration of the Interim Committee of the Pan American Highway Congresses, meeting June 15-18, and the initiation of a new program to mobolize private enterprise and public opinion behind official efforts to complete the Pan American Highway.

Ranking diplomats of the 21 member nations of the Organization of American States, headed by the Secretary General Alberto Lleras; Washington diplomatic representatives of the American Republics; officials of the U. S. State and Commerce departments, and Congressional and business leaders attended the dinner.

Vice-President Nixon delivered the welcoming address and presented also the "O'Farrill" and "Jacobsson" highway awards to International Road Federation fellowship students who have shown the greatest progress in studying advanced highway engineering in the United States for the 1952-53 school year. Johannes F. Schwar, of Pretoria, South Africa, attending the Yale Bureau of Highway Traffic, was selected for the "Jacobsson" award, and Marciano D. Bautista, of Manila, Philippine Islands, attending the Ohio State University School of Highway Engineering, for the "O'Farrill" award.

Mr. Lazo, colorful 36-year-old Minister of Public Works of Mexico and one of the world's foremost architects who directed the design and construction of Mexico's new University City, made the key speech on the Pan American Highway, stressing the importance of private enterprise cooperation with efforts of the American governments to complete the hemispheric highway system.

Senator Ferguson responded to Mr. Lazo's address, and Frank T. Magennis, chairman, International Road Federation and vice-president, Goodyear Tire and Rubber Export Company, was the toastmaster.

The Interim Committee of the Pan American Highway Congress was authorized at the Special Pan American Highway Congress in Mexico City last year. The committee is charged with the review of proposals made at that Congress for the establishment of a continental highway organization and to prepare plans for the Sixth Pan American Highway Congress to be held next year in Caracas.

It will review also reports of three technical committees, including recommendations for financing the construction of the highway system; the organization of national highway departments, and the routing of the highway. The committee, in addition, acts as the coordinating agency for the highway congresses and official and private enterprise cooperation for its completion.

Represented on the committee are delegates and advisors from Argentina, Brazil, Mexico, Peru and the United States. The Mexican delegation, for example, in addition to government delegates, will include Romulo O'Farrill, Sr., president of the Mexican Roads Association and one of Mexico's foremost businessmen.

International Road Federation was founded by businessmen in 1948 to promote development of national highway systems around the world for improved living standards and trade. It has associated national roads organizations in some 45 countries. The Federation is a cooperating agency of the Organization of American States, which is the secretariat of the Pan American Highway Congresses; a consultant to the United Nations and an accredited agency of Organization for European Economic Cooperation.

Central America Is Main Obstacle

Bottlenecks in the Pan American Highway exist in Guatemala, northern and southern Costa Rica, northern and southern Panama, and southern Ecuador. Mexico, with three primary highway links to the United States, has completed its Pan American system without outside assistance. It is paved to within 100 miles of Guatemala.

But for a 25-mile gap in northern Guatemala, through traffic on the highway from Alaska, Canada and any part of the United States would be possible as far south as Costa Rica. The road is open in the remainder of Guatemala, and in El Salvador, Honduras and Nicaragua, although large segments of it are dirt or gravel surface.

There are two gaps in Costa Rica, less than 100 miles in the northern part of the country which may be traversed by jeep, and 134 miles of impassable route in the south part of the country. There is a 14-mile section in Panama at the Costa Rica boundary which is incomplete. Nearly 200 miles south of the Panama Canal to the Colombian border is as yet unsurveyed.

The United States has been cooperating with the Central American governments in the construction of the highway through these countries, extending some 2,500 miles from the Guatemalan-Mexican border to the Colombian frontier. The countries in South America are building their own highway sections without U. S. assistance. The highway system is now being improved and reconstructed in many of the South American countries and the only impassable sector is about 50 miles in south Ecuador near the Peruvian border. Extensive portions of the highway, however, may be driven over only during the dry season and large parts are unpaved, poorly graded and in some places hazardous.

New York City Adopts New Hand Signals

New regulations, governing hand signals by drivers whose vehicles are not equipped with signaling devices, have been formulated and went into effect July 1, 1953, it has been announced by Traffic Commissioner T. T. Wiley.

The new rules constitute an amendment to Section 97, Article 6, of the City's Traffic Regulations, and will become effective simultaneously with similar requirements adopted by the State Legislature at its recent session and enacted into law with the signature of Governor Dewey.

The amended regulation reads as follows:

"1. Signal by drivers—Signal by driver of vehicle not equipped with a mechanical or electrical signal device. The driver of such a vehicle, before starting from the curb or turning to the right or left or slowing down or stopping, except in stopping on a red light or in an emergency, shall give timely warning by holding his arm out from the left side of the vehicle in the following manner:

(a) Left turn—hand and arm extended horizontally.

(b) Right turn—hand and arm extended upward.

(c) Stop or decrease speed—hand and arm extended downward.

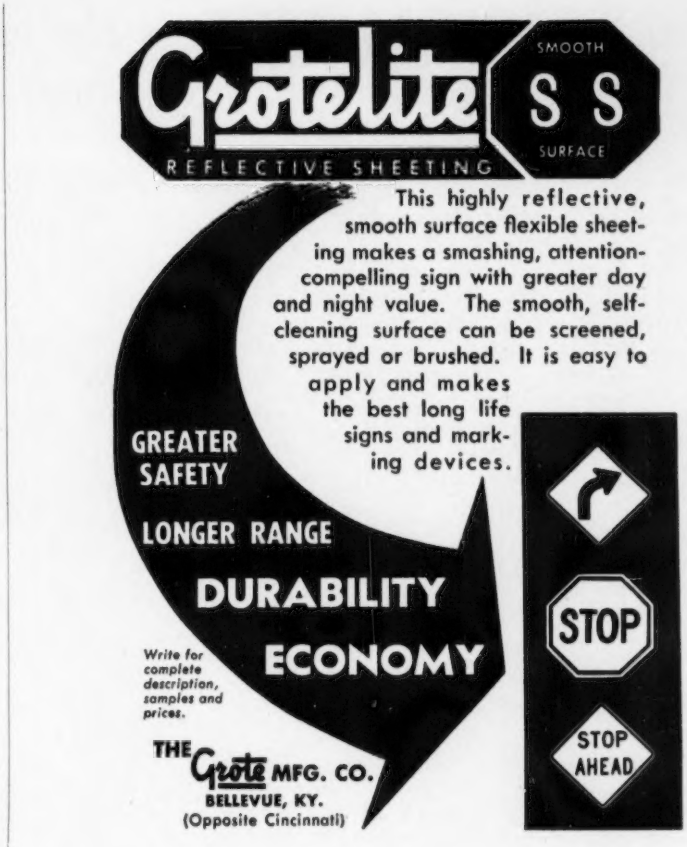
This section shall not apply to street cars or to drivers or motormen of street cars.

"2. Signal by driver of vehicle equipped with mechanical or electrical device. A driver of such a vehicle, before starting from the curb or turning to the right or left or slowing down, shall give timely warning by said signaling device."

Under the existing regulation the only hand signal required of drivers operating vehicles not equipped with signal devices was the extension of the arm horizontally. This was accepted as a signal for either a left turn, a right turn, or for slowing or stopping.

"I am happy that the Legislature approved hand-signaling rules that are less confusing, more realistic and practical, and to amend the City's regulations to conform," Commissioner Wiley said. "The new rules, which will become effective in the City of New York through this amendment to the City's Traffic Regulations, and through the rest of the State at the same time, are in conformance with the regulation

(Continued on page 361)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New Safety Booklet Out

A new traffic safety booklet, "Common Sense Pays Off," which lists tips for safer driving and declares that "everyone should take an interest in the prevention of accidents," has been issued by the Association of Casualty and Surety Companies to stimulate interest of both youthful and adult drivers in safe driving practices.

Pointing out that accidents year after year kill and maim more and more men, women and children and wastefully destroy property amounting to multi-billions of dollars, the booklet emphasizes: "The public pays those bills, not the insurance companies; because losses from accidents inescapably must be included in the price that people pay for their insurance protection. Therefore, everything that we do, or can do, to bring down the toll of traffic accidents not only saves lives, and spares people from being maimed, but also saves them vast sums of money."

Illustrated with cartoons and charts, the booklet urges drivers to recognize their responsibilities and "use common sense while driving to avoid accidents," pointing out that skillful drivers are safe drivers. It then develops that skillful drivers drive at safe speed, yield the right-of-way, know and observe traffic rules, "expect the unexpected," steer clear of "tavern fog," heed the "signs of life" in highway warning and regulatory signs, and keep the car in good shape for their own safety and the safety of others, and make turns properly.

Prepared by the Association's Accident Prevention Department, the booklet is being issued through its member companies for public distribution through insurance agents to policyholders, civic organizations, high school driver education students and non-driver education classes. It can be obtained from the Association, 60 John Street, New York 38, N. Y., or any of its member companies.

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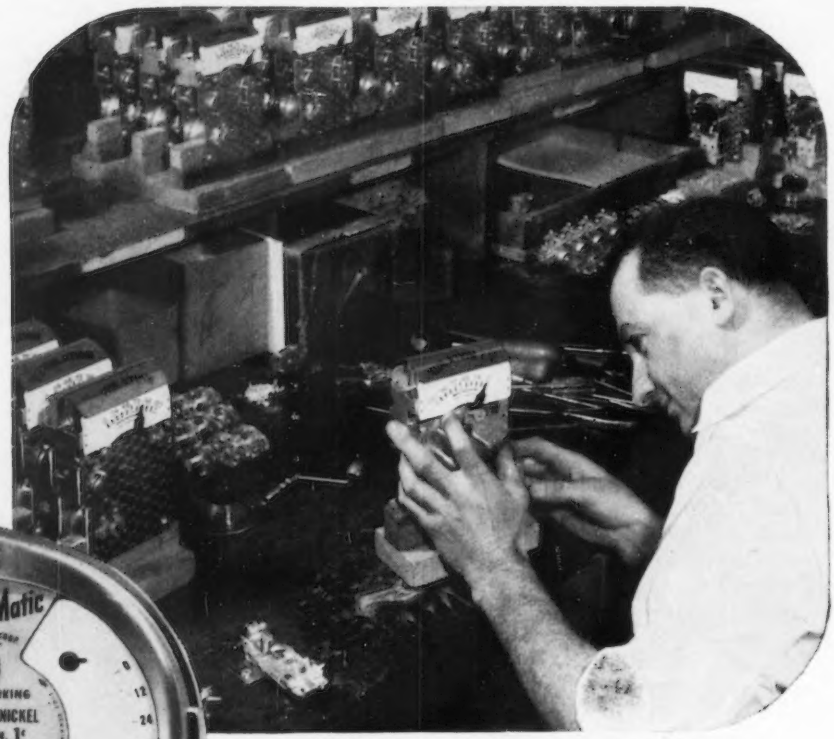

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Twenty Engineers Complete Yale Course

Twenty men completed the graduate course in traffic engineering at the Bureau of Highway Traffic, Yale University, in June. These men will join 291 engineers already in the field who have completed the course of study at the Yale Bureau.

Many of the men returned to their former positions with various state highway departments, city traffic departments and other agencies.

Five men have positions in the urban traffic engineering offices of Albuquerque, New Mexico; Cook County, Illinois; Detroit, Michigan; New Orleans, Louisiana; and Tulsa, Oklahoma.

Three men have gone to planning and traffic engineering divisions of state highway departments of Idaho, Illinois, and Kansas.

Four men went to positions in the Transport Division of France, Belgium, Union of South Africa, and the Ontario Department of Highways in Canada.

Two men have gone into educational and research work, two have joined consulting firms, and the remaining four have obtained positions in closely allied fields.

The names and addresses of the men awarded Certificates in Highway Traffic by the Committee on Transportation are as follows:

Armstrong, William J.—Traffic Department, Kansas Highway Commission, Topeka, Kansas.

Avery, Eugene V.—319 Fifth Avenue North, South St. Paul, Minnesota.

Barnett, Norman C.—Traffic Engineer, Traffic Engineering Department, Tulsa, Oklahoma.

Burton, Francis C.—Traffic Engineer, Traffic Engineering Department, Albuquerque, New Mexico.

Corgill, William E.—Assistant Traffic Engineer, Association of Casualty and Surety Companies, 60 John Street, New York, New York.

Crosby, John R.—New Jersey Turnpike Authority, New Brunswick, New Jersey.

Elkouby, Joseph S.—Ingenieur des Ponts et Chaussees, Direction des Routes, Ministere des Travaux Publics, 244 Boulevard Saint-Germain, Paris, 7e, France.

Goelen, Edmond M.—Ingenieur a Ja Direction Generales des Routes, Ministere des Travaux Publics, Residence Palace, Brussels, Belgium.

Hammond, Daniel S.—Traffic Engineer, Charles A. Maguire and Associates, Turks Head Building, Providence, Rhode Island.

Hartley, John E.—Junior Traffic Engineer, Department of Streets and Traffic, 112 East Jefferson Avenue, Detroit 26, Michigan.

Heroy, Frank M., Jr.—Assistant Traffic Engineer, Division of City Traffic Engineering, Howard Annex, New Orleans, Louisiana.

Huber, Matthew — Assistant Professor, Department of Civil Engineering, Michigan State College, East Lansing, Michigan.

Kanak, Richard H.—Cook County Highway Department, Traffic Engineering Division, 130 North Wells Street, Chicago 6, Illinois.

Macnee, Walter Q.—Assistant Traffic Engineer, Traffic Division, Room 2637, East Block Parliament Build-

(Continued on page 361)

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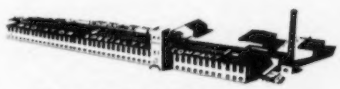

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2010

New Appointments . . .

McGrath Signs With Consulting Firm

William R. McGrath (Junior Mem., ITE) accepted a new position with Wilbur Smith Associates in June at the end of the Yale Bureau of Highway Traffic academic year. Prior to the new appointment, "Bill" was Research Assistant at the Yale Bureau teaching statistical methods, supervising laboratory work and implementing research projects. He received his degree in Civil Engineering at Rensselaer Polytechnic Institute in 1950 and attended the Yale Bureau as a student in 1951. He was retained by the Bureau as a member of its staff upon completion of the course. Previous experience included construction work with the Bureau of Public Roads, engineer in training with New York State and part time work with several traffic engineering consultants.

William R. McGrath

Under his new assignment, "Bill" will be in charge of the New Haven office of Wilbur Smith Associates located at 265 Church Street, New Haven. In addition to consulting responsibilities, he has a very busy family life with four sons and another son expected. He is an active lodge and civic club member in his home town, Wallingford, Connecticut, and on rare occasions when the opportunity permits, likes to reflect upon the tremendous traffic consulting potentialities of McGrath & Sons, Inc.

Corgill Joins ACSC

William E. Corgill, who has conducted traffic engineering studies in Buffalo for the New York State Department of Public Works, has been appointed traffic engineer on the staff of the Accident Prevention Department of the Association of Casualty and Surety Companies, J. Dewey Dorsett, general manager, has announced.

William E. Corgill

During the past year Mr. Corgill has been on leave from his Buffalo duties to complete the course of study in traffic engineering at the Yale Bureau of Highway Traffic on a Rand-McNally scholarship. In Buffalo he was attached to District No. 5 headquarters, where he was assigned to the traffic engineering department under G. W. Treble, traffic engineer, in 1950. He headed the highway planning unit of the district office before he was placed in charge of highway density studies in 1952.

A native of Utica, N. Y., Mr. Corgill joined the U. S. Army Engineers in 1943 at Fort Belvoir, Va., and after a year as an instructor served with the First Armored Division Engineers in Italy. He saw action through the Appenines Mountains and the Po Valley campaigns. Following his discharge from the Army in 1946 he continued his education at Sampson College and Bucknell University, where he was graduated with a B.S. in civil engineering in 1950.

Thomas N. Boate, manager of the Accident Prevention Department, said Mr. Corgill will devote most of his time to the Association's series of bulletins, "Getting Results Through Traffic Engineering," other publications of the department, and to related duties.

Mueller Accepts Position with Yale Bureau

Edward A. Mueller has taken up his new duties as Research Assistant at the Yale Bureau of Highway Traffic. He was a graduate of the 1953 class at the Bureau.

Before taking the Bureau course, Ed was employed for two years by the firm of Ammann and Whitney, consultants on the Milwaukee Expressway system. Before that he served three years with another consulting engineering firm in Madison, Wisconsin, and a brief period with the Wisconsin State Highway Commission between school semesters.

Mueller, born in Madison, Wiscinsin, in 1923, attended the University of Wisconsin for three semesters and graduated from the University of Notre Dame in 1947. He was in the Navy from February, 1943, to June, 1946, being returned to inactive duty as an Ensign in the Civil Engineer Corps. Ed had a short tour of duty in the Philippines with the 61st Seabee Battalion and 622nd Maintenance Unit.

He is associated with the Organized Navy Reserve in New Haven and the American Society of Civil Engineers as well as the ITE. Ed is registered as a professional engineer in the State of Wisconsin. He has a private pilot's license and his hobbies are aviation and traffic engineering.

Please Mention
Traffic Engineering
When Writing to Advertisers

Schmidt Joins Yale Staff

Robert E. Schmidt (Assoc Mem., ITE) has joined the staff of the Yale Bureau of Highway Traffic, effective July 1. Before moving to New Haven,

Robert E. Schmidt

Schmidt was City Traffic Engineer in Tacoma, Washington, where he organized that department in 1949. Schmidt was a member of the Bureau class of 1947, following which he was appointed District Traffic Engineer for the Washington State Department of Highways in Vancouver, Washington, a position which he held for two years.

As a new member of the Bureau staff, Schmidt will be engaged primarily in the preparation of some new publications dealing with basic traffic engineering problems and techniques.

LOOKING AHEAD

AUGUST 10-12, 1953—LOS ANGELES, CALIF.
Annual Meeting, American Transit Association, Hotel Biltmore.

SEPTEMBER 14-18, 1953—NEW YORK CITY
Annual Meeting, Illuminating Engineering Society, Hotel Commodore.

SEPTEMBER 28-OCTOBER 1, 1953 — BUFFALO, N. Y.
24th Annual Meeting, Institute of Traffic Engineers, Hotel Statler.

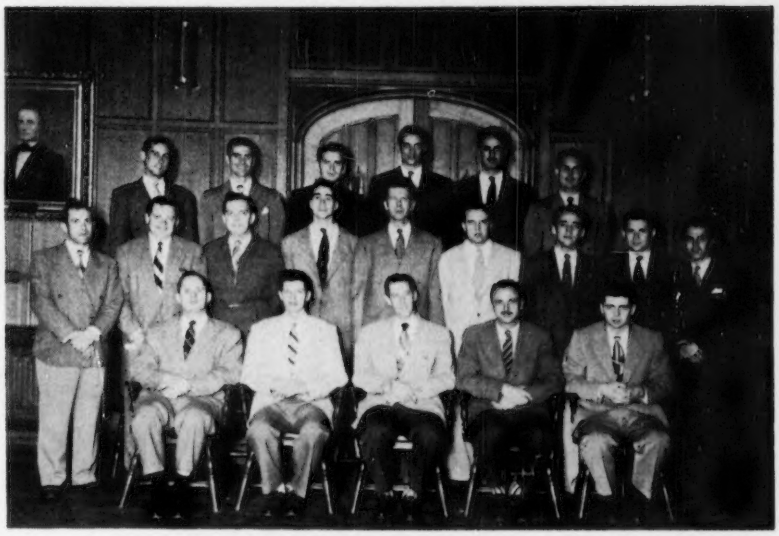
OCTOBER 5-8, 1953—COLUMBUS, OHIO
58th Annual Meeting, International Municipal Signal Association, The Neil House.

OCTOBER 7-9, 1953—SANTA FE, N. M.
Annual Meeting, Western Association of State Highway Officials, La Fonda Hotel.

OCTOBER 19-23, 1953—CHICAGO ILL.
National Safety Congress. Headquarters —Conrad Hilton Hotel.

TWENTY ENGINEERS COMPLETE YALE COURSE

(Continued from page 359)



1953 Yale Bureau Class

Front Row: Hammond, Whiteside, Crosby, Macnee, Kanak.
Second Row: Burton, Huber, Avery, Elkouby, Corgill, Mueller, Hartley, Olcott, Goelen.
Third Row: Heroy, Armstrong, Schwar, Markert, Ross, Barnett.

ings, Ontario Department of Highways, Toronto, Ontario.

Markert, Lowell W.—Civil Engineer II, Bureau of Research and Planning, 126 East Ash Street, Springfield, Illinois.

Mueller, Edward A.—Research Assistant in Transportation, Yale Bureau of Highway Traffic, 311 Strathcona Hall, New Haven, Connecticut.

Olcott, Edward S.—Assistant Highway Planning Engineer, Port of New York Authority, 111 Eighth Avenue, New York 11, New York.

Ross, Lewis J.—Traffic Engineering Department, Department of Highways, Sixth and Main Street, Boise, Idaho.

Schwar, Johannes F.—Roads Engineer II, Division of Civil Engineering, Department of Transport, Pretoria, South Africa.

Whiteside, Robert E.—Traffic Engineer, Wilbur Smith and Associates, 265 Church Street, New Haven, Conn.

Bevins Chosen Among Atlanta's 100

This past spring the Atlanta Constitution ran a poll of its readers to select the 100 young men destined to be the outstanding leaders of the future, and most likely to write the exciting new chapters in Atlanta's progress.

The 100 chosen represent practically every field of endeavor, from Architecture through Banking, Journalism, Television and all the rest to wholesale merchandising.

Karl Bevins (Mem., ITE), City Traffic Engineer, was one of the two men chosen from the Government field, a young investigator from the Solicitor General's office being the other.

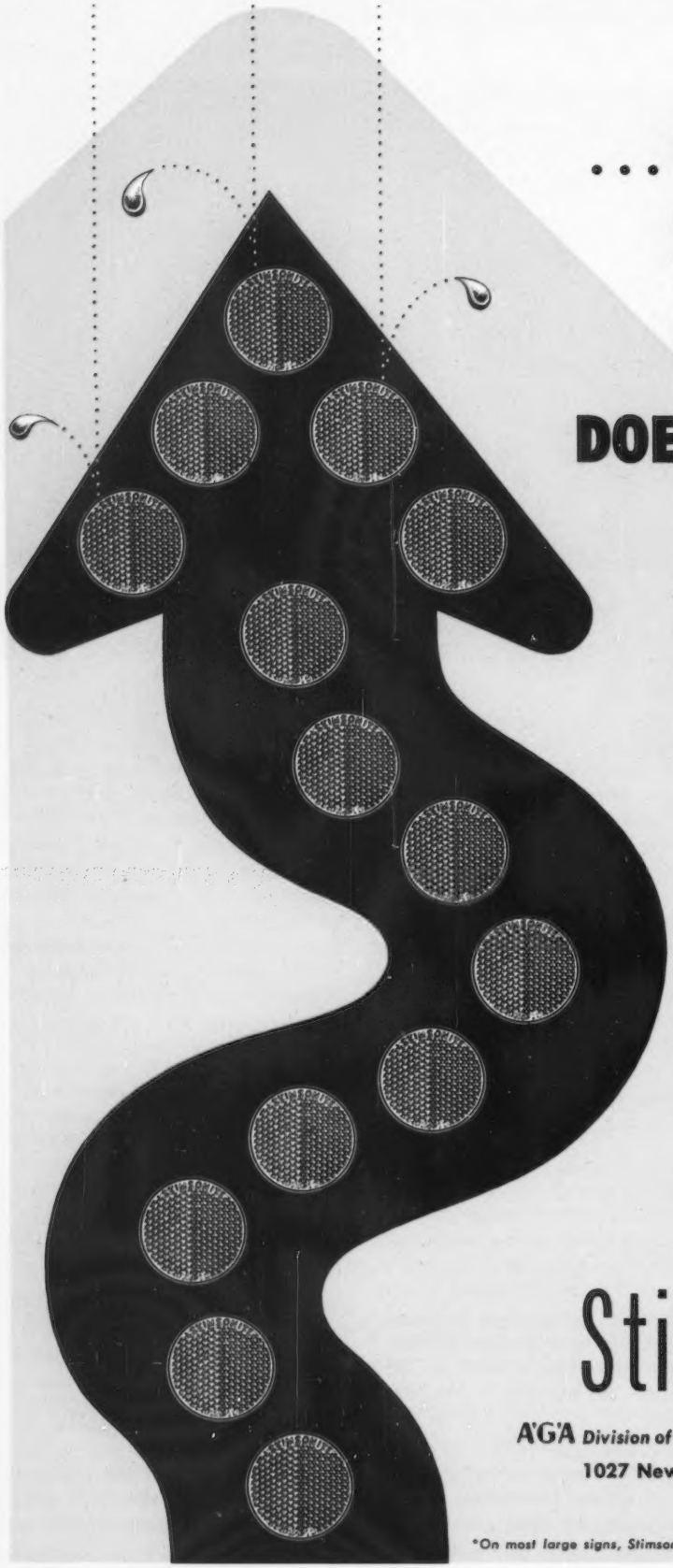
Pictures of the 100, together with a statement of the field of endeavor, title and connection, appeared on a three page spread of the Constitution for April 15, 1953.

NEW YORK CITY ADOPTS NEW HAND SIGNALS

(Continued from page 357)

embodied in the Uniform Vehicle Code, drafted by the Country's leading experts in this field and now in effect in many States.

"I am certain that the more specific directives in the new regulation will be more easily understood by both drivers and pedestrians and will prove an important step towards reducing traffic accidents, particularly rear-end collisions."



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SECTION NEWS

Michigan Section

The annual meeting of the Michigan Section of the ITE closing out the 1952-53 year was held at the Warren Valley Golf Club just outside of Detroit on May 7, 1953.

The day began with typically beautiful Michigan weather as it dribbled rain all morning. Only a handful of the more rabid golfers ventured out onto the course, including that torrid foursome of Herm Batts, Bill Leighton, Sy Bergsman and Buck DesRoches. The rest of the members and guests that arrived early spent the afternoon becoming educated in the finer points of card playing.

Roast beef, buffet style, was served to approximately 69 people in the evening and the business meeting held shortly afterward.

Al Sherman opened the meeting up and guests were introduced. Fred Meno gave a short report on his activities as our representative to the Engineering Society of Detroit. Sam Levine reported that Fred Kaiser and Seymour Bergsman had been accepted as junior members in the national organization and were, therefore, members of the Michigan Section upon payment of their yearly dues. It was later revealed that Jack Gallagher was also available to us as a new member.

Sven Kansman gave his annual Treasurer's report which indicated that we were operating in the black. He was later overheard mumbling in his beer that something should be done about getting rid of this excess profit.

New officers for the 1953-54 year were nominated and elected. These new officials are Sam Levine, President; Sven Kansman, Vice-President, and Ed Gervais, Secretary-Treasurer.

The success of this meeting was credited to Frank Ronan, Bill Marvin and Grand Dad Carrier. The next meeting was scheduled for the Flint area in June under the direction of Harold Hickman.

Reported by Sven Kansman
Secretary-Treasurer

Missouri Valley Section

The Annual Meeting was held on April 30, 1953, in the office of Mr. Tom Seburn at the City Building, Kansas City, Missouri. President George J. Fisher, Traffic Engineer of Wichita, presided. As none of the members were superstitious the meeting was called to order with 13 present, with representation from three of the six states in the Missouri Valley Section.

Besides the routine business of receiving and filing the annual reports of the Section the members approved the applications of five affiliate members into the Missouri Valley Section. Next, the members held an informal discussion on plans for the 1954 Institute of Traffic Engineers Annual Meeting in Kansas City. At the conclusion of this discussion an Executive Committee for handling the planning for the Annual Meeting was formed with Tom Seburn as Chairman. Following this discussion the new officers of the Missouri Valley Section were elected and they are as follows; President, Leon Corder, Traffic Engineer, State of Missouri; Vice-President, J. J. Feuchter, President of Traffic Associates, St. Louis, Missouri, and Secretary-Treasurer, W. W. Rankin, Wichita, Kansas. Following the election of officers there was some discussion of amending the By-laws of the Missouri Valley Section and a revision of the membership classifications in the Section.

At the conclusion of the regular business meeting the members enjoyed a short social get-together, at which time copies of the Nebraska Municipal Review and the Missouri Municipal Review for January 1953 were shown to the Section. This issue of these municipal publications carried a coverage of the letter by past Section President George Fisher to Wichita, to the Associations describing the use and advantages of the profession of Traffic Engineering. The Section had authorized the President to write to these Associations on this subject at an earlier meeting. All the members agreed that the favorable coverage given the subject in the article would be a definite advantage to traffic engineering's use and practice in the Section's area.

Reported by W. W. Rankin
Secretary-Treasurer

New York Metropolitan Section

The sixth (luncheon) meeting of the 1952-1953 fiscal year of the New York Metropolitan Section was held May 27, 1953, at the Masonic Club. Twenty members and guests were present.

The meeting was opened with a report of the Nominating Committee. No other nominations were presented by the members present, and by unanimous vote, the following officers were elected:

Richard I. Strickland, President
Nathan Avins, Vice-President
Herbert J. Klar, Secretary-Treasurer

In order to comply with the constitution, a motion was made, duly seconded and adopted, directing the secretary to cast a written ballot for the slate of officers.

The newly elected officers are to take office at the first meeting in September 1953.

The secretary then read the financial report which was unanimously adopted as read.

A discussion followed about the arrangements and date for the next, seventh, meeting, which is to be an outing on Travers Island. The date of the meeting was adopted as Saturday, June 27, 1953, and all members of the New England section are to be invited to participate in the outing. Mr. Harold Hallock is to make final arrangements for the outing, and the secretary was directed to circularize all members of the New York and New England Sections about the details of the outing.

The speaker of the meeting, Mr. Guy Kelcey, presented a very interesting and informative talk on problems of Highway construction in Iraq, in connection with the Point 4 program of the U. S. Department of State. Mr. Kelcey is under contract to the State Department to furnish technical assistance to the Iraqui government in the construction of highways. Mr. Kelcey presented numerous slides, showing present roadway conditions, difficulties encountered during construction, and various street scenes in important cities of Iraq.

Reported by Nathan Avins
Secretary-Treasurer

Western Section

From WesternITE for May-June

The Sixth Annual Conference of the Western Section Institute of Traffic Engineers has come and gone. The record turnout was ample proof of the interest developed by the Conference which was held in conjunction with the Northwest Traffic Engineering Conference. It was agreed by all that the two-day session was well worth while, and the Conference was adjourned amidst the feeling of pleasant associations and renewed acquaintances.

New Officers: Newly elected officers for the 1953-54 year were: Donald S. Berry, President; J. Al Head, Vice-

President; W. H. Carsten, Secretary-Treasurer.

In his acceptance speech Donald Berry as incoming President stressed the matter of "upholding the standards of the Institute" and "stimulating greater activities in more of the areas of the Western Section."

Reports From Area Chairmen

Washington — Bob Schmidt, Washington Area Chairman, reported four meetings during the year and one held in conjunction with the annual Governor's Safety Conference.

Oregon—Bud George reporting for the Oregon area stated that an adequate number of meetings had been held; that attendance was good, and that the reason was due to stressing particular speakers at each meeting.

Los Angeles—Al Hutchinson reporting for Harry Parker, Chairman of the Los Angeles Area, stated that four dinner meetings had been held in that area, and that the last dinner meeting of the area took place on May 7th at the Taix French restaurant in downtown Los Angeles. Forty-four members and friends of the Institute gathered to hear Amos E. Neihart speak on "The Traffic Engineer's Responsibility for Street and Highway Safety." Professor Neihart is head of the Institute of Public Safety at Pennsylvania State College.

Arizona—Wayne Morris of Phoenix reported no formal meetings, but several informal get-togethers.

Secretary's Report

The Western Section roster (as of May 1) shows 123 active and paid up members as follows: Members, 36; Associates, 50; Affiliates, none; Juniors, 37.

Records indicate also that there are 16 members of the national chapter who live in the Western Section area that are not members of the Western Section.

Old and New Business

Awards—In accordance with a resolution passed by the preceding Conference, appropriate awards were to be presented to the Past Presidents and Vice-Presidents of the Western Section. These handsomely designed awards were presented to the following members for having rendered loyal, competent and auspicious service as officers of the Western Section, Institute of Traffic Engineers:

1947-1948—F. M. Carter, President; W. H. Carsten, Vice-President.

1948-1949—J. W. Bollong, President; J. A. Czizek, Vice-President.

1949-1950—J. E. Reading, President; J. T. Fowler, Vice-President.

1950-1951—F. T. Fowler, President; J. E. Havenner, Vice-President.

1951-1952—J. E. Havenner, President; H. C. Higgins, Vice-President.

1952-1953—H. C. Higgins, President; D. S. Berry, Vice-President.

ITE Membership—It was agreed by all present at the Business Meeting that the processing of applications for membership be speeded up as much as possible. A motion was made and passed that the Membership Committee or Secretary immediately upon receipt of an application for membership should notify the applicant that his forms are being processed. It was agreed also that through the medium of WesternITE it should be stressed that persons replying as references for applications return the completed forms as soon as possible. Bruce Crandall, our national prexy, promised to take the matter up at the next board meeting.

Sports Flash

Questionable Results of the 6th WesternITE Annual Tennis Tournament (short title, 6 Watt).

The Oregon Territory, failing to produce an accredited team practiced in the art of netting bouncing balls, reduced the number of contestants in 6 Watt to California and Washington entries. Notwithstanding the liquified condition of the court, WCTU regrets the action it must take in disqualifying for somewhat similar reasons, the California team captained by and composed of, the "Sole Surviving Sentinel of Sawtell," with five formal charges as follows:

WCTU Charge No. 1: He did wilfully pollute the great natural resource of the Sovereign State of Washington, namely "Water," by instilling quantities of distilled disinfectant in all amounts consumed internally by the prospective 6 Watt gallery.

WCTU Charge No. 2: He did with forethought of purpose violate the Territorial Act of 1889 by inciting natives to riot on the Local Reservation after 9 P.M. "curfew" and thereby disrupt the pre-game rest of the "ALL-AMERICAN BOYS" WASHINGTON team.

WCTU Charge No. 3: He did fail upon two occasions to accept the challenge of the four-man WASHINGTON team to appear upon the 6 Watt Field of Honor at the reasonable hour of 6 A.M. (eastern standard time).

WCTU Charge No. 4: He did shamelessly appear in public at 6 P.M. in answer to the above challenge, attired in so-called "Bikini" tennis shorts (post-blast type) that indecently exposed two knobby knees, so gruesome in aspect that 100 people congregated in the hotel lobby re-enacted the "White Pass Stampede" to the nearest dispenser of spirits.

WCTU Charge No. 5: He did fail to produce a racquet to show his good faith in participating in 6 Watt, when it was common gossip that he has the biggest "racket" in the country.

FURTHER: The Washington Captain claims victory upon the basis of a conceded statement made by the California El Capitan that was overheard 10 doors down the hall, "I'm glad it rained and I didn't have to play."

Signed
Ano Nymous,
Regent pro tem
(W)esternITE (C)onference
(T)ennis (U)nion

City and County of Denver

Jack Bruce reports that on April 29th the Denver area of the Western Section had its regional meeting at the Democratic Club in Denver. Twenty-two people were in attendance and enjoyed a very interesting talk by Henry A. Barnes. Hank discussed the traffic engineering situation in Baltimore including signal timing problems, one-way streets, channelization of complicated intersections, and traffic engineering administration.

Reporting on his own activities, Jack mentioned that he had a wonderful time on his vacation through California. While in Los Angeles he had an opportunity to renew acquaintances with Joe Havenner, Dan Gerlough, Dick Bartle and Harry Matthewson.

Al Pepper and staff assisted the Colorado Highway Safety Council in organizing the 1953 Governor's Highway Safety Conference held in Denver on June 26th and 27th. Al and his assistant served as Secretaries to the Engineering Division and handled the Records Division of the Conference.

Luke Merriam reports that traffic engineering work in the field is not half as back-breaking as spade work in the garden, promoting the orderly growth and development of his 500 gladiolas.

From the Roving Reporter

Skinny DeYoung, our erstwhile dispenser of news (among other things), took time out in Santa Barbara to give us the following items:

Hank Barnes of Denver has accepted the Traffic Engineering job in Baltimore, and will move East at once. (It is reported that he will receive the largest salary of any traffic man in the country). Another WesternITE, Bob Schmidt, makes good. With Bob on his way to Yale after proper indoctrination in the West, we can expect the traffic problem in the East to become less fouled up.

Nick Carter is still in the Ashland, Oregon, General Hospital. He was required to have another operation and was granted an additional sick leave. Nick, in good spirits, states that he is getting along fine.

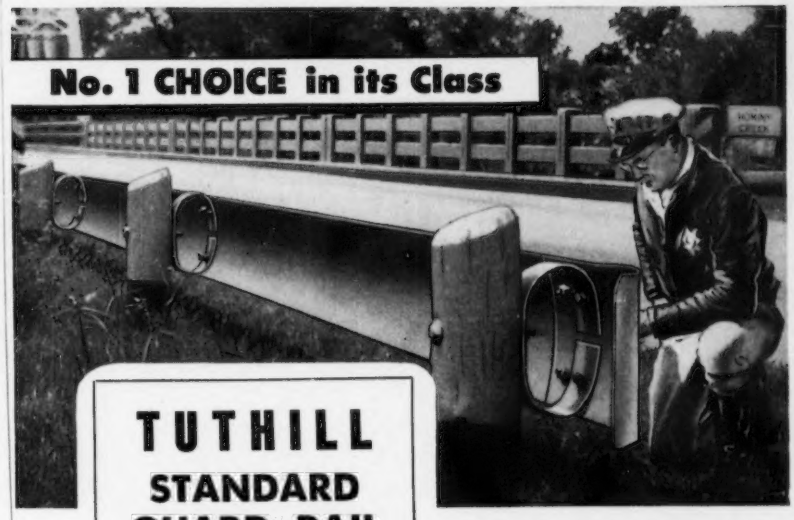
Jake Young has now been promoted to Legislative Lobbyist (Jr. Grade) for the California Division of Highways. He certainly knows his way around the Sacramento Capitol Building, geographically.

Paul Green and Skinny, while up in the North, stopped at Richland, Washington, and became radiated when an artillery shell sputtered a radio-active rain all over the place. Skinny, accustomed to some of the hotter places, took it in his stride, but poor Paul, from the atom bombless East, didn't fare quite so well.

Too Late to Classify

Al Matthews (Econolite) writes that Al Head is hospitalized from a gall bladder operation. The Western Section's best wishes for a speedy recovery go to our new V.P.

Reported by W. H. Carsten
Secretary-Treasurer



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Secretary's Column

The third quarterly meeting of the Board of Direction for the 1952-1953 administrative year was held in Washington June 11 and 12, 1953. All members of the Board, with the exception of Messrs. Matson and Ristroph were present. The Board meeting followed the meeting of the Joint Committee on Uniform Traffic Control Devices, called by Chairman Hilts earlier in the week, and was immediately preceded by a meeting of the ITE Technical Council, Wednesday afternoon, June 10th, attended by Council members McNeil, Evans, Havenner, Sielski, Malo, Ricker, with ex-officio members Crandall and Todd. This was the first formal meeting complete with an agenda, that the Council has held.

Among the plans of the Technical Council is a regular committee page in TRAFFIC ENGINEERING on the affairs of the Council; and the laying out of a program of work and committee assignments well in advance each year in order that the arrangements can be confirmed during the Annual Meeting.

Among the more important actions of the Board were the following:

1. The election of two Full Members, five Associates and nine Juniors. The transfer of one Associate to Full Member, and three Juniors to Associates.

2. The approval of a shortened and improved appearance application blank; also the purchase of a photo copying machine which will enable Headquarters office to expedite the processing of applications. This was in answer to criticism of the existing membership application procedure, which has reached the Board.

3. Accepting the resignation of two members no longer in the traffic engineering field.

4. Received from the Chairman of the Policy Committee a report, requested by the January Board, relating to a policy on acceptances of advertising for TRAFFIC ENGINEERING magazine. The Committee took the position that an advertisement in TRAFFIC ENGINEERING does not necessarily imply endorsement of the product or service.

5. Received report from the Policy Committee relative to life membership and instructed Executive Secretary to ascertain the effect on finances in future years and report to the next Board meeting.

6. Received report that sales of Handbook by September will approximately offset all expenses to date of publication of the first edition, and that there will then be about 4600 copies left on hand, and that after September all Handbook sales will be clear profit, the proceeds of which are, by contract, to be split with the Association of Casualty & Surety Companies, who underwrote the initial publication costs.

TIM TODD

COORDINATION

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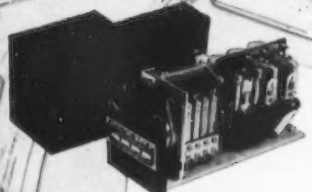

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Yearbook Changes

ANDRIACCHI, Louis A. (Assoc.)
Field Engineer, Minnesota Mining & Manufacturing Company. CEdar 3071. SEND MAIL: 4619 Hopkins Avenue, Dallas, Texas.

BATES, Russell G. (Assoc.)
5977 Shafter Avenue, Oakland 16, California.

BIERMAN, Melvin (Junior)
Traffic Engineer, Panama Canal Company, P. O. Box 292, Balboa Heights, Panama Canal Zone.

BUCKLEY, J. Paul (Member)
Chief Engineer, Highways Division, Automotive Safety Foundation, 200 Ring Building, 1200 Eighteenth Street, N. W., Washington 6, D. C. REpublic 7-6395.

DAMON, Norman (Affil.)
Vice-President, Automotive Safety Foundation, 200 Ring Building, 1200 Eighteenth Street, N. W., Washington 6, D. C. REpublic 7-6395.

FISHER, George J. (Member)
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June 12, 1953 Board Meeting

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Hugh M. Gilman—Junior to Associate
Sven Kansman—Junior to Associate

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CLEES, Elmer A.
Associate Planning Engineer, Washington Department of Highways. 25611, Ext. 634. SEND MAIL: 3215 Lorne Avenue, Olympia, Washington.

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GAYMARD, Ludovic
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Municipal Financial Consultant, Stone and Youngberg, San Francisco. SUtter 1-5460. SEND MAIL: 3029 Dakota Street, Oakland 2, California.

CONNER, Robert E.
Traffic Engineer, Knappen-Tippetts-Abbett-McCarthy. SEND MAIL: 422-B Clearview Drive, Euclid, Ohio.

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Assistant Traffic Engineer, Newark. MArket 2-5400. SEND MAIL: 265 West End Avenue, Newark 6, New Jersey.

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Junior Traffic Engineer, 268 Civic Center. SEND MAIL: 670 Loring Street, San Diego 9, California.

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KEITH, Robert A.
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KOSAI, Yoshio
Acting Traffic Engineer, Public Works Department, City Hall, Tacoma, Washington. BRoadway 3141.

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